1878 75 1953
YEARS OF ELECTRICAL PROGRESS

BUSINESS UP, ACCIDENTS DOWN Businessmen say relighting brought window-shopping crowds, encouraged new enterprises. Relighting cut traffic accidents 35% in only a few years—a tremendous economic saving, since studies show each traffic fatality means a loss of $65,000.

MAYOR T. A. BURKE, a strong advocate of good street lighting, actively promoted Cleveland's relighting program.

WELL-LIGHTED STREETS PAY

One thousand miles of new street lighting

"Cleveland saves with light. It has saved itself hundreds of lives, untold thousands of dollars worth of property, and millions in accident and crime prevention since we started our 'Relighting Cleveland' program in 1946," says Mayor Thomas A. Burke.

The birthplace of street lighting in 1879, Cleveland today lays claim to being the best-lighted city of its size in the world, and one of the safest.

In just six years, Greater Cleveland has gained over 1000 miles of well-lighted streets, of which 500 miles are in the city. This program is continuing.

Working hand-in-hand, the Cleveland Electric Illuminating Co. and the City of Cleveland are installing at least 100 additional miles of new lights each year.

They are backed by an enthusiastic public which endorsed a bond issue with a whopping 74 percent majority. The reasons for such support are told in the picture story on these pages.

G-E LIGHTING ENGINEERING is helping to relight thousands of miles of streets all over America, making communities safer, more pleasant places to live.

TRAFFIC ACCIDENTS awakened the public to the need for better lighting. This driver, a young doctor, was killed when his car ran through a barricade into a river at the end of a poorly lighted street.

CLEVELAND'S RELIGHTING was carefully planned by officials of the City's Division of Light & Power, Bureau of Street Lighting, the Cleveland Electric Illuminating Co., and General Electric engineers.

BEFORE RELIGHTING, many of Cleveland's darker streets were unsafe for women and children, pedestrians and drivers. Crimes and accidents occurred frequently in poorly lighted areas like this warehouse district.

AFTER RELIGHTING, the same street looked like this. Burglaries and attacks are a thing of the past, and the danger of traffic accidents is greatly reduced. Cleveland's citizens feel safer walking after dark.

OFF FOR CLEVELAND

saves lives, property and money

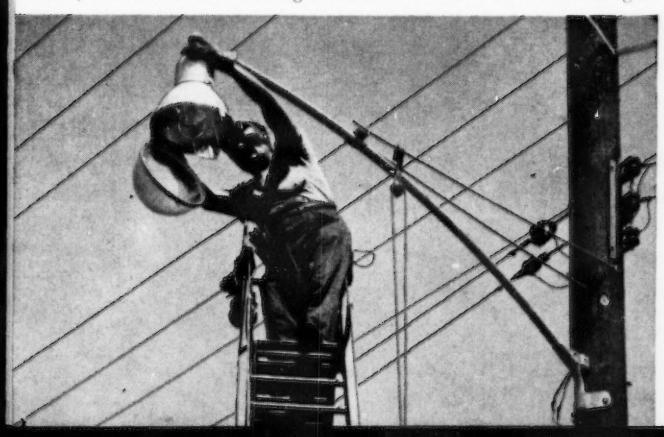
Your electric utility can call on General Electric's services for planning and consultation, just as Cleveland's utility has done. Vitally interested in your community's welfare, your utility has the know-how to help you modernize your street lighting quickly and economically.

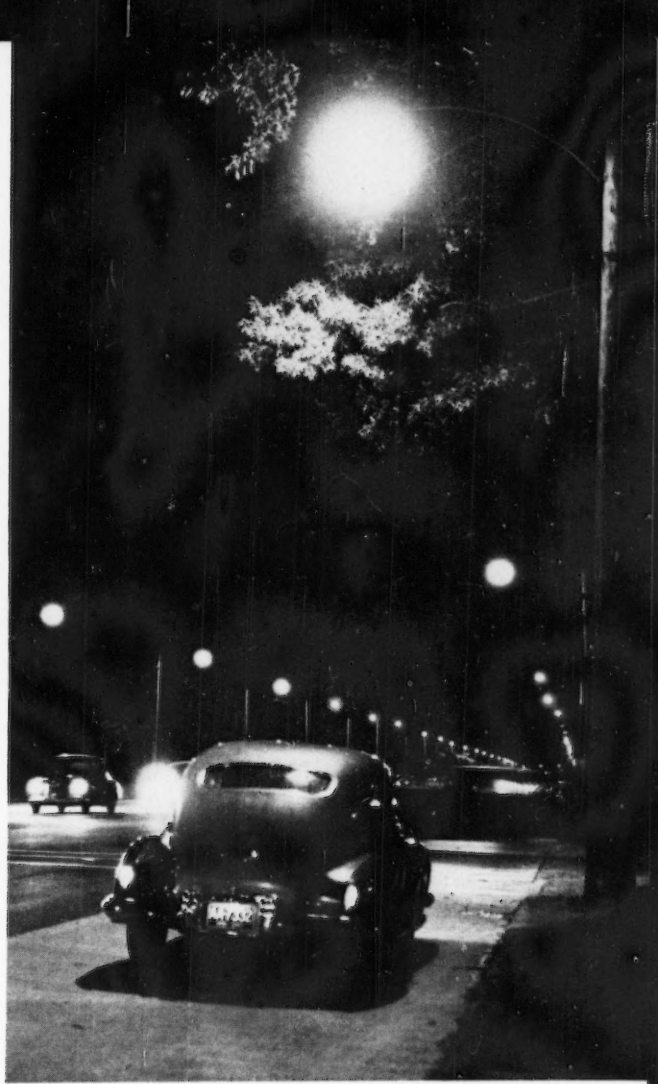
If you would like our booklets on how to plan and promote new street lighting in your community, write Section 452-130, General Electric Co., Schenectady 5, N. Y.

You can put your confidence in—

GENERAL ELECTRIC

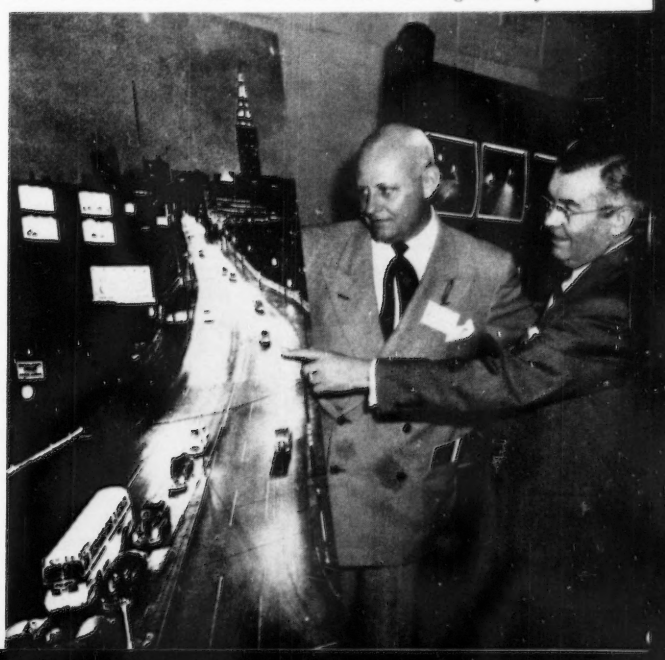
"CASUALTYWAYS," Cleveland's term for streets with high accident rates, and "fearways," dark crime-ridden streets, were given top priority. Here, a workman is installing a modern General Electric street light.





TRAFFIC moves quickly and safely along well-lighted streets. Cleveland police and fire departments have found they do better jobs—fewer calls, and they arrive sooner when needed.

E. L. LINDSETH, President of Cleveland Electric Illuminating Co. and Mayor Burke were widely acclaimed for their spearheading of the drive which made Cleveland the "best lighted city."



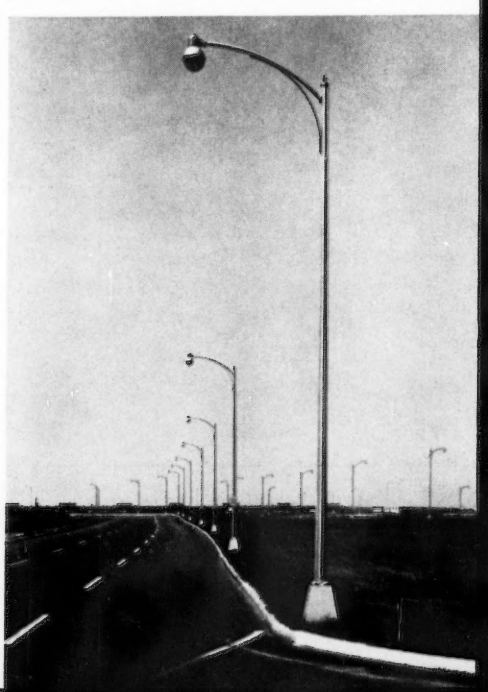
Safety...the keynote

AT BOSTON'S ULTRAMODERN LOGAN INTERNATIONAL AIRPORT

AT this remarkable new airport, second to none in the world, they did a superb job of modern planning for safety and convenience—not only for traffic by air, but for heavy auto traffic as well. Here, facilities must accommodate an average of 4500 motor vehicles daily!

As shown in the accompanying photos, there are broad access roadways and spacious parking areas—all adequately safety-lighted with continuous-tapered Monotube poles, both single and twin bracket types, supporting the latest type luminaires.

For information on Monotubes proper for *any* outdoor lighting need, write to The Union Metal Manufacturing Co., Canton 5, Ohio.



UNION METAL

Monotube Street Lighting Poles

Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME XXIII | FEBRUARY, 1953 | NUMBER 5

COVER: Traffiic engineering often includes snow removal "engineering," as there's nothing which brings highway transportation to a standstill with a complete stoppage of the lifeblood—commerce—of a community, city, state, sometimes a geographical area, quicker than a major snow storm that outruns the capacity of the snow removal equipment. This scene shows a rotary plow pausing to permit a long distance truck to rumble across the continental divide at Loveland Pass on US 6 in Colorado.

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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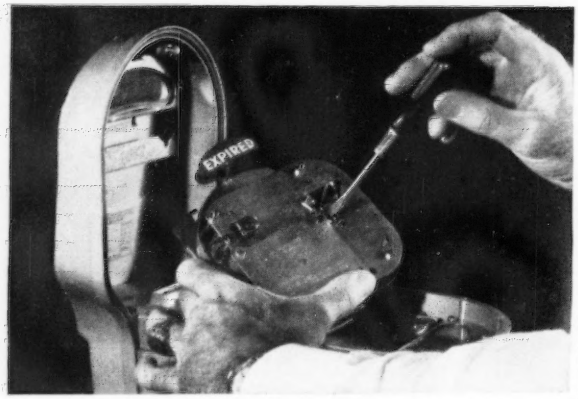
PARKING METER NEWS

FACTS EVERY CITY GOVERNMENT SHOULD KNOW

No Problem To Change Time Periods



Users of Dual Parking Meters are very enthusiastic about the *gearshift* feature. Coin-and-time settings can be made on the street as required. No need to exchange parts or keep a stock of extra parts.

6 REASONS WHY

Single head and Dubl Dual meters have the same efficient automatic mechanisms—one in the single head; two independent mechanisms in the Dubl Dual.

DUALS stand the "gaff"

AND GIVE

BETTER SERVICE LONGER!

1. SETH THOMAS CLOCK MOVEMENT... Backed by the world's most famous fine clock maker.
2. STAINLESS STEEL COIN MECHANISM... Smoother running in all weather conditions.
3. WEATHERPROOF HEAD . . . With handy work-shelf door.
4. SUPERIOR DESIGN . . . Discourages cruising; time indicator visible only from sidewalk side.
5. ON-THE-STREET TIME-AND-COIN CONVERSION . . . To meet changing traffic conditions.
6. EASY TO PATROL AND OPERATE . . . Observation window shows slug or tampering at a glance. No levers to move.

Whether you prefer the Dual single head or Dubl Dual meter, you get extra dependable, profitable operation—automatically. Remember, *you can't buy Dual quality at a lower price.* Write for Dual bulletins DU-521 for on-street parking and DU-522 for off-street parking.

FAMOUS SETH THOMAS MOVEMENT EXCLUSIVELY IN DUAL METERS

Longer Service with less upkeep reported

CANTON, OHIO—A typical Dual Parking Meter installation in Lubbock, Texas, in constant, efficient operation since 1936. Many cities after years of experience with Dual meters report it is less expensive to install meters that outlast the normal amortization period. Such reports show that Dual Parking Meters last for many years after their original cost has been written off.

RECEIVES PRAISE

The Seth Thomas timing movement receives praise from Dual users everywhere. Cities reporting list the efficient self-starting feature, the giant 10′ 8″ mainspring—that can be removed for oiling and cleaning without tearing down the movement—as outstanding reasons why Dual Parking Meters operate longer, and cost less to maintain than any other meter.

Dual Weatherproof Feature Important

From Newfoundland to the deep South, city after city report constant, efficient service in all types of weather and moisture conditions. The reasons why Dual meters are able to stand heavy impact, moist or dry humidity and extremes in temperature are listed by users as better quality materials, stainless steel dustproof case and the clock brass movement housed in a sturdy die-cast aluminum housing sealed with a rubber gasket.

THE DUAL PARKING METER COMPANY

A subsidiary of The Union Metal Manufacturing Company

Canton 2, Ohio

Frankly Speaking

AT THE HEART of the official definition of traffic engineering are the familiar words "safe, convenient and economic transportation." Have you ever wondered about the priority of safety, convenience, and economy? It's worth some cogitation, for all three are measures of how well our work is done.

The economic aspect of highway transportation is probably today's number one headache. Insufficient highway construction revenues, street and highway deficiencies totaling billions of dollars, declining use of urban mass transit, and other factors are all evidence that the public is not always quick to support those transportation facilities or improvements that are truly economical. Rather, as in the case of toll expressways and taxicab travel, they will pay without hesitation an almost fantastic unit price for immediate superservice.

The later effects of this apparent indifference toward the economic consequences cannot be forecast with any surety. Though the engineer is firmly bound by tradition and training to economical processes, his efforts are strongly subservient to the public will. The need for transportation improvements clearly will continue to expand, and his actions must somehow be geared to that expansion. It seems inevitable that scientific determinations of "how to pay" will become an increasingly vital phase of the engineer's responsibility. It is not nearly so certain, however, that the engineer can or should force decisions as to future improvement programs solely on the grounds of their economic justice.

Convenience, the byword of the American way, is fast becoming necessity as we go to higher and higher standards of living. Habits of travel, now well-defined by engineering study, show that the typical traveler worships convenience. The transportation flexibility available in the private passenger car exerts an amazingly powerful lure. Though street and parking congestion may reduce any provable convenience advantage of this means of transport to zero, or even to a disadvantage, many drivers will complacently struggle on, feeling that alternate means, such as mass transit, offer other inherent inconveniences of still greater magnitude.

Convenience is a finicky, personal matter subject to an exceedingly wide range of interpretation. Little wonder, then, that the engineer has had to draw on the arts as well as the sciences in the everlasting wrestle with traffic management problems. We may conclude that although transportation convenience is a highly relative item when regarded singly, the engineer must recognize and respect its demand.

Safety, the other member in the trio of traffic engineering objectives, has as its principal stake the conservation of life, limb and property. It is difficult to hold with those who see accidents as an outgrowth of congestion. On the mileage exposure basis, deaths occur in rural traffic twice as frequently as in city traffic, yet the capacity deficiencies are obviously greater in the latter areas. Definable accident costs now average more than two-thirds of a cent for every mile we drive and the national total is a disgraceful extravagance.

But this is only a cold statistic representing the value of services lost by death or disablement, of medical expense, of overhead costs for automobile accident insurance, and of property damage. Monetary values could hardly be assigned to the suffering, grief and emotional strain that followed in the wake of the more than 9 million accidents of 1952. Yet these humanitarian considerations are probably the most significant segment of the entire loss. For this reason, no dollar estimate of safety benefits is ever likely to be overstated.

If the engineer's prime responsibility is to people, then where better could his major attention be turned than to their safety and protection? The problems run the gamut of the entire highway engineering profession and are admittedly complex, but a moral obligation to make safety a goal of first importance abides now and for the future with the traffic engineer.

Secretary-Treasurer

Others Are

TAKING ADVANTAGE OF OUR LIBERAL TRADE-IN PLAN . . . WHY DON'T YOU . . .

We'll Give Top Price On Old Meter Trade-In

NEW 1953 DUNCAN-MILLER

NEW 1953 DUNCAN-AUTOMATON

YES . . . others are . . . why don't you modernize your parking meter installation? When we say "modernize" we mean, get rid of that old, obsolete, worn-out affair that's costing you plenty of revenue to keep it going. Trade it in for new, modern, efficient equipment, like for instance, the "most-talked-about and most often bought meters" as shown at left.

We'll give you top price for what your old meter is worth, and replace your present installation with either automatic or manual type meters. Duncan builds whichever type you prefer—the one and only 100% automatic DUNCAN-AUTOMATON, or the industry's oldest and most dependable manual—the DUNCAN-MILLER. Their performance, stamina, money-saving features, and maintenance economies establish them as America's No. 1 parking meters.

If old age has caught-up with your installation, drop us a line, today, for complete details and advantages of our trade-in plan.

DUNCAN PARKING METER CORP.

835 N. WOOD ST. CHICAGO 22, ILL.

Factory at Harrison, Arkansas

Manufacturers of the DUNCAN-AUTOMATON fully automatic and the DUNCAN-MILLER manual parking meters.

The Bowser Garage at Des Moines

By Ladis H. Csanyi (Mem., ITE)
Professor of Civil Engineering, Iowa State College, Ames, Iowa

THE REDUCTION of maneuvering space to a minimum compatible with rapid, easy and safe access to parking stalls is the most difficult problem encountered in the design of a parking facility. This problem must be faced in every type of parking facility, be it a parking lot or parking garage. Many effective layouts have been devised and many ingenious devices invented to provide an efficient and economical solution to this problem. In the garage type of facility many forms of automatic devices such as ferris wheel arrangements, stacking of cars, and use of various types of elevators have been suggested or tried with varying degrees of success.

Although the use of elevators in garages is not new, their application to rapid, efficient, and safe parking of vehicles involves many other problems. Among these may be included, not only a suitable arrangement between parking stalls and elevators, but also the development of many mechanical and electrical devices on the elevators to assure rapid, safe and dependable operation and control.

In the Bowser System Parking Garage, its inventor Mr. V. C. Bowser has adopted a rather simple stall and elevator layout and has invented the necessary appurtenances to make this combination function effectively and efficiently. In this system the elevator is hung from a gantry which moves horizontally, thus giving the operator access to a number of parking stalls on each floor (Fig. 1). When this gantry elevator is placed in a shaft having access to stalls on each side of the shaft, the maneuvering space required is one car length for two stalls. If additional stalls, one behind the other on either one or both sides of the shaft are provided, the required maneuvering space is still further reduced to one car length for three or four car stalls. Furthermore, the maneuvering of the vehicle is limited to straight forward or backward motion between elevator and parking space. In this system the car to be parked is driven straight into the elevator. The elevator is then raised in a diagonal motion by simultaneous action of gantry and elevator to the desired stall, where it is driven either forward or backward off the elevator directly into the stall. In removing the car from the stall the reverse procedure is followed, and the car is driven forward off the elevator to its owner. The car has not changed its direction from the time the owner left it until he has reclaimed it. All turning movements are thus eliminated in this system.

Although the concept and operation is extremely simple, it necessitated the invention and development of many ingenious devices for the control of the elevator and the location of parked cars before it became practical.

The first parking garage designed under the Bowser System was built at Fourth and Locust Streets in Des Moines, Iowa. (Fig. 2). It is a reinforced concrete building 78 feet wide, 127 feet long with entrance and exit to and from the elevators on the ground floor, and eight parking floors above and one below the ground floor. Each parking floor contains 45 parking stalls, each 20 feet by 7½ feet, 15 stalls on one side and 30 stalls on the other side of the elevator shaft. Thus 405 stalls are provided in the building, plus 25 if the entrance and exit areas are utilized, making a total capacity of 430 car spaces. This parking garage was opened for operation during September, 1951.

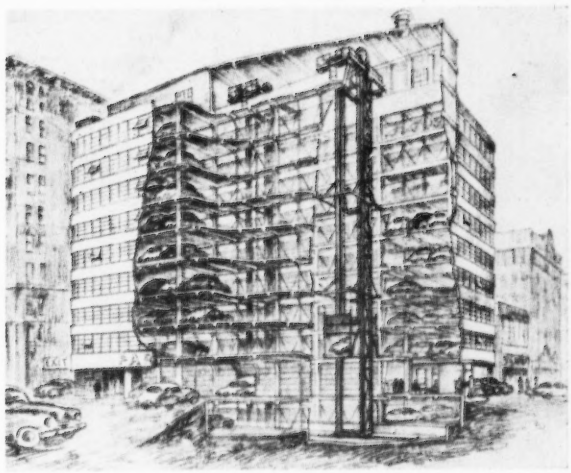


Fig. 1
Cut-a-way sketch of Bowser System Garage.

Three elevator gantrys are used to provide rapid access to the stalls. Each elevator normally serves a bay of five rows of stalls or fifteen car stalls on each floor. The gantrys are so designed that the elevators of each can service all but two rows of stalls on each floor if necessary. When all three elevators are in operation simultaneously, the gantrys are provided with safety switches and bumpers to prevent them from encroaching upon each other. The elevator cages are 20 feet by 7½ feet in area and have a rated capacity of 5000 pounds. The gantrys have a rated capacity of 25 tons. The operating speed of the elevators is 200 feet per minute vertically and that of the gantry is 100 feet per minute horizontally. Each elevator is fitted with automatic push button controls to any stall in the building within its operational range. These controls are supplemented by manual controls. They are also fitted with all modern floor levelling devices and push button control of both elevator cage and stall gates. Thus, by pressing a button, the operator closes the gates. Then, when the desired stall button is pressed, the elevator cage travels diagonally to this stall and levels off. The operator presses the gate button and the gates open and the car is driven directly into the desired stall.

The ground floor of the garage is reserved for entrance and exit facilities. Twelve entrance stalls are provided in front of the elevators as reservoir space. The space behind the elevators is utilized for reclaiming cars. Space is also provided at this level for a cashier's booth, waiting and rest rooms.

Fig. 2
The Bowser Garage in Des Moines.

The efficient and effective operation of this type of garage is dependent not only on the operation of the elevators, but also on an accurate occupancy control of all parking stalls in the building. To provide this phase of the operations a special automatic electrical system had to be devised which co-ordinates the checker's station where cars are assigned to stalls, the elevator call board, and the cashier's station where cars are called for. A location signal panel suspended in front of the elevator entrances (Fig.3) indicates all unoccupied stalls within the normal operating range of the elevator it services. This panel is electrically interlocked with the signal rack in the cashier's station (Fig. 4) which is in turn interlocked with the call board in the elevator (Fig 5).

To describe the operation of this system briefly it is best to follow a car in the process of being parked and being called for. As a car enters the garage it moves into a stall directly in front of an elevator. Here the checker refers to his location panel and assigns the car to a vacant parking stall. He marks the number of this stall in three places on a three part ticket together with make and license number of the car and then stamps the time of entry on each part. One part of the ticket is given the driver of the car as his claim check, the second part is dispatched to the cashier's booth by a belt conveyor, and the last part is placed on the car to tell the elevator operator where the car should be parked.

As soon as the cashier receives her part of the ticket, she inserts this in her signal rack in a pocket which indicates the space to which the car is assigned. The placing of this ticket in the signal rack actuates a circuit which indicates on the checker's location panel that this stall is occupied.

The elevator operator moves his elevator in front of the car and opens the elevator and stall gates, removes his ticket from the car, and drives the car directly into the elevator. He then pushes a button closing the gates, and presses the button of the stall to which the car is assigned. The elevator moves directly to this stall and stops. The gates are opened and the car is driven directly into its assigned stall. The elevator operator returns to the elevator and places his part of the ticket in his call board. He then proceeds to get another car.

When the driver returns to claim his car, he presents

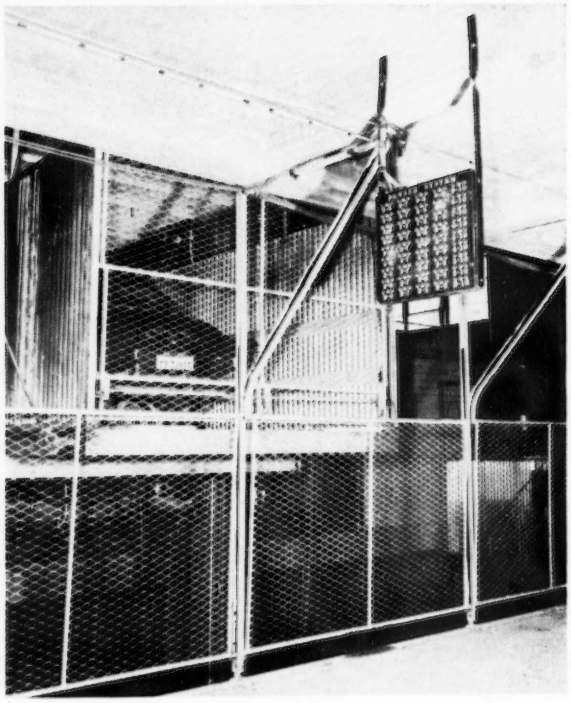


Fig. 3
Checkers Occupancy Control Panel.

his claim check to the cashier. The cashier removes the corresponding stub from her signal rack. In so doing a light under this car stall is illuminated on the elevator call board informing the elevator operator that that car is being called for. The elevator operator moves the elevator to the stall and drives the car onto the elevator and removes his stub from the call board. In moving this stub the electrical circuit to the checker's location panel is actuated to show that this stall is now unoccupied. While the car is being brought down, the cashier calculates and collects the parking fee. In a few moments after the driver leaves the cashier his car is ready for him. The car is driven directly off the elevator and after the claim check is verified the car is returned to its owner.

(Continued on page 170)

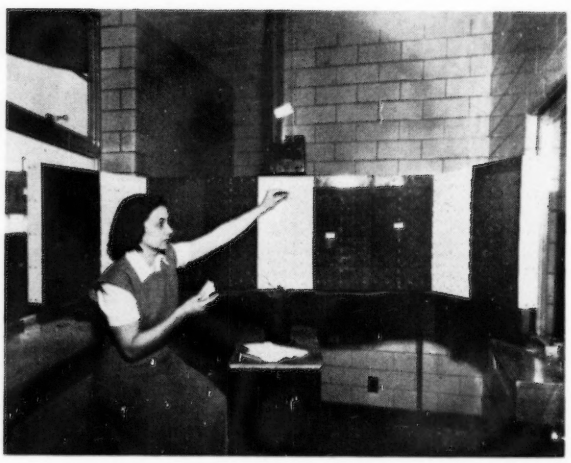


Fig. 4
Cashier's panel.

Economical Maintenance of Traffic Signal Systems*

By Fred J. Meno II (Assoc. Mem., ITE)

Senior Associate Electrical Engineer, Detroit Lighting Commission, Detroit, Michigan

NEARLY EVERYONE, I believe, is well aware of the important part that the streets and highways in this great land of ours play in our personal lives and in the National Economy. But without traffic signal systems our roadways would be from 25% to 50% less efficient and our standard of living would correspondingly suffer. The jobs of many of us here present depend upon our traffic signal systems and certainly we have a moral obligation to our fellow citizen to keep these systems operating as efficiently and economically as possible.

Any traffic signal system whether it be large or small, is no better than the care with which it is maintained. We all know that a Lincoln, a Packard, a Cadillac or a jeep is an expensive item to use if we don't keep water in the radiator, oil in the crankcase or air in the tires; whereas an automobile, properly kept up, plays an indispensable part in our daily lives. Likewise a traffic signal system not properly maintained becomes expensive not only in our maintenance budgets but also in traffic delays and congestion and in highway hazards. We in the maintenance field with high prices and limited budgets cannot afford to overlook any plan which will tend to minimize our costs and will still keep our systems operating efficiently.

A great many operating agencies believe the "Preventive Maintenance" schedules are the answer to low maintenance budgets and high system operating efficiency. This belief is predicted upon the theory that incipient troubles that can be prevented by routine work are less costly than those which are not worked on until after they occur. It seems ironic that most troubles occur on holidays, Saturdays and Sundays; during the night or peak traffic conditions; when overtime must be paid or when conditions are least conducive to efficient system repairs. To those of you who practice preventive maintenance, what follows will be merely a review. To those of you who do not, it is hoped that what follows will be an arow that will point the way to lower maintenance budgets, and to signal systems that, operationwise at least, will compare with the best. Of course, these remarks are based on the axiom that out signals, stuck signals, poorly timed or poorly visible signals jeopardize the lives, limbs or property of the users of the roadway.

First, let us consider the signals themselves. A signal that is not cleaned accumulates dirt through the years and thereby loses 60 to 80% of its punch or visibility. Therefore, be sure to include cleaning of the optical units in your routine signal maintenance schedules.

Using a preventive maintenance program, the optical units are cleaned and the signal lamps replaced on a schedule based upon the work being done at about 90% of the rated life of the lamps. This schedule would practically eliminate signal outages. Any outage would be the result of defective lamps and since those defects would occur under any method of maintenance, they have not been weighed in analyzing the costs.

Fred J. Meno II

Without such a program, lamps are not changed until burnout and a tendency seems to develop to omit cleaning the optical units.

If we assume the use of 2000 hour lamps, that they are operated at rated voltage, and that they are operating on a 60-40% split in timing, that they cost 20c per lamp, that a man is paid $2.50 per hour, but that equipment rental is ignored; then a careful analysis of costs indicates that lamp replacement on a preventive maintenance schedule would cost $.80 per year as against unscheduled replacement costs of $2.52 per year per lamp. This indicates a saving of $1.62 per lamp per year. If you multiply the number of lamps you have in your system by this figure you will have at least an idea of how your maintenance budget picture may be improved. If you use 4000 hour lamps, the lamp replacement cost would be reduced but the savings would be, percentagewise, the same. But whether you have 25 or 25,000 lamps on your system the savings are there and waiting for you.

In addition to the actual dollar saving there is the dividend of more effective optical units because of their being cleaned and the nebulous but always possible cost of accidents which might have occurred had lamps burned out before replacement.

*This paper was presented to the 2nd Traffic Signal Seminar, held at Lansing, Michigan, December 3, 1952.

To get rated lamp life it is vitally important that the actual voltage at the lamp is not greater than the rated voltage of the lamp. I would urge you to check the voltage at your controllers and use lamps based on that voltage. For instance if you find the voltage to be 118 volts use lamps rated at not less than 120 volts. Although many may disagree with me, I feel that with optical units cleaned regularly, you may safely use lamps rated at 5 volts higher than the applied voltage without suffering from poor signal visibility. We do that in Detroit and are able to plan a six months relamping schedule instead of a 3½ month's. With our 26,000 lamps plus the savings are rather amazing.

Can you afford not to use a preventive maintenance schedule on your traffic signal lamps?

Then let us consider traffic signal controllers. Off hand I think of nothing else mechanical, except electric clocks and battery chargers which the public expects to run continuously 24 hours a day, 365 days a year and 366 days in leap years. We have come to think of the automobile as a mechanical, relatively trouble free device but if we drive continuously at 25 miles per hour in one week we would have covered 4200 miles and should have had from 2 to 4 oil changes and chassis lubrications. Less frequent but properly scheduled controller maintenance can pay big dividends.

I think we should figuratively doff our hats to those reputable manufacturers who have tried so diligently to produce better controllers and who are approaching the goal of trouble free operation.

However, since that goal has not yet been reached there are steps we can take to minimize troubles and thereby minimize accidents, delays and congestions that are caused by controller troubles. In so doing there will be a saving impossible to evaluate but nevertheless obtained. A preventive maintenance program scheduling routine checking of controllers in the field or shop will conceivably reduce trouble calls that stubbornly seem to occur mostly during periods requiring premium pay for the maintenance men. For example in the northern parts of our state, the controllers had a tendency to stall during the winter nights when temperatures were lowest. But now the highway men, before the onset of cold weather, lubricate their controllers with a very light oil. In the spring regular oil is used. Results have shown that they could not afford to do otherwise.

In general, it is recommended that not less than every six months each controller be cleaned; that its contacts be checked for contact pressure, wear, burning, and that they be replaced if necessary; that it be checked for mechanical wear or damage; and that its timing be verified. Since this work can be scheduled for light traffic conditions, the intersection may be protected by flashing signals, if the controller is equipped with a separate flasher, or by a police officer. Keep a record of the items showing need of attention and the manufacturer with this information will be in a position to improve design to minimize the troubles.

To facilitate controller maintenance, it is highly desirable to have a flasher in the controller separate from the mechanism and arranged to flash amber for the main street and red for the cross. The unit may be jack type in which case the flasher itself could be carried by the maintenance man and plugged in on the controller on which he is working. This would allow the controller to be removed without having dark signals and then would not require police coverage. Without this method it is quite possible that you will have to wait as long to get police coverage at it takes to check the controller.

Inasmuch as offset timing is one of the maintenance division's functions, it is highly desirable in using non-interconnected synchronous controllers that they be equipped with voltage indicators. Properly maintained controllers will hold exact relationships, one to another as long as there is no service interruption. By use of the voltage failure indicators, it becomes possible to limit your offset checking to occasions when the indicator is lighted.

A little study, a little planning pays big dividends. Can we afford to do less?

Auto Plant Moved While Output Continues

Anyone who ever moved his family to a new home can appreciate the problem of moving an automobile plant.

The job was done recently with no loss of production and with no loss of working time to employees.

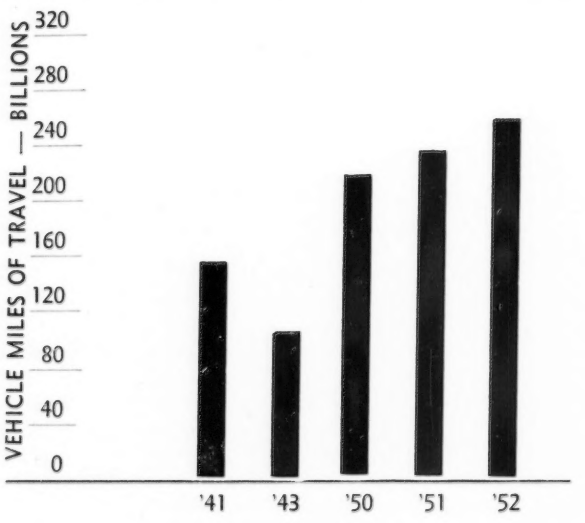
It involved transferring complex manufacturing and assembly operations from an old plant to a new building about 20 miles away. Accomplished in well-planned stages over a two-month period, the transfer constituted one of the biggest moving jobs in the history of the automobile industry.

The process of moving thousands of machines, fixtures and production parts began with the body shop. During an interim period, bodies were turned out at the new plant and shipped back to the old one where final assembly lines continued in operation.

The job was completed over a recent weekend. As the last car came down the assembly line at the old plant, movers dismantled machinery and conveyors behind it.

Some 1,300 employees still working at the old plant on Friday reported to the new one Monday morning.

Traffic Trends



TRAVEL ON RURAL ROADS FOR FIRST ELEVEN MONTHS OF 1941, 1943, 1950, 1951 and 1952

Based on Bureau of Public Roads Data

23rd Annual ITE Meeting Paper

No. 14, Presented at the Second Technical Session which was devoted to the subject, Developing the Traffic Plan, September 10, 1952, at 9:00 A.M.

A Comprehensive City Traffic Plan

By Lloyd M. Braff (Mem., ITE)
City Traffic Engineer, Dallas, Texas

THE TRAFFIC DELIMMA in most urban areas can be minimized greatly if cities will prepare and carry out a comprehensive traffic plan. The traffic planning function in a traffic engineering office should be given equal or greater emphasis than the function of traffic operations. Every Traffic Engineer recognizes that some of his traffic operations are about as effective as locking the barn door after the horse has been stolen. Some of his day-to-day techniques are relieving a traffic pressure but are not curing the problem. While these activities are necessary, he knows the only alternative is to prepare a well-conceived traffic plan and convert that plan to reality.

In Dallas we have a river which practically divides the city in half. Viaducts across this river and its flood lands vary from one-half to one mile in length. The area across the river from the Central Business District is growing rapidly. All of the viaducts are crowded. During the past several years we have made a remarkable improvement by operating three lanes in the rush direction with one lane in the non-rush direction. As soon as this was done on one viaduct, traffic was able to speed across where before they traveled at a snail's pace. After approximately ten months, however, the traffic volume increases were such that the viaduct was again congested. Several months ago a second viaduct was converted to three lane operation and again traffic movement was radically improved. Now that bridge is also becoming overcrowded. While the off-center technique is extremely effective, we are aware of the fact that we will soon run out of viaducts and that our only solution is to construct new facilities which are planned to accommodate existing and future traffic demands.

Engineers who have studied the problem and prepared traffic plans acknowledge that the best conceived traffic plan cannot be effective if the cost of executing that program is beyond the ability of the city to pay for such improvements. In conjunction with a well conceived traffic plan, therefore, there must be a serious study of ways and means of obtaining supplemental finances to put the plan into effect:

1. Preparation of a plan,
2. Study of supplemental finances, and
3. Putting the plan to work.

DALLAS PROBLEM

In this paper I will describe the procedure now being followed in Dallas in preparing a comprehensive traffic plan. Dallas has had a phenomenal post war growth. Population has increased from 294,734 in 1940 to 432,927 in 1950. Since 1950 population has increased more than 50,000. At the close of the war in 1945 Dallas had an area of 48 square miles. Today it has an area of 160 square miles—an increase of 112 square miles or 335% in only seven years. Ultimately it is expected to reach 230 square miles.

Fig. 1

Dallas County population rose from 398,564 in 1940 to 612,318 in 1950. It is the most densely populated county in the State of Texas and exceeds by 50% the second most densely populated county. It is rapidly becoming an urban county.

A master plan of Dallas was completed just before the rapid growth began. Population in Dallas today exceeds that forecast for 1970. Vehicle registration likewise exceeds predictions for 1970. On the basis of vehicles per capita Dallasites have and use as many automobiles as any section of the country.

During the rapid post war growth the City adopted a policy of getting first things first. The bulk of its expenditures, therefore, were for water and sewers. The construc-

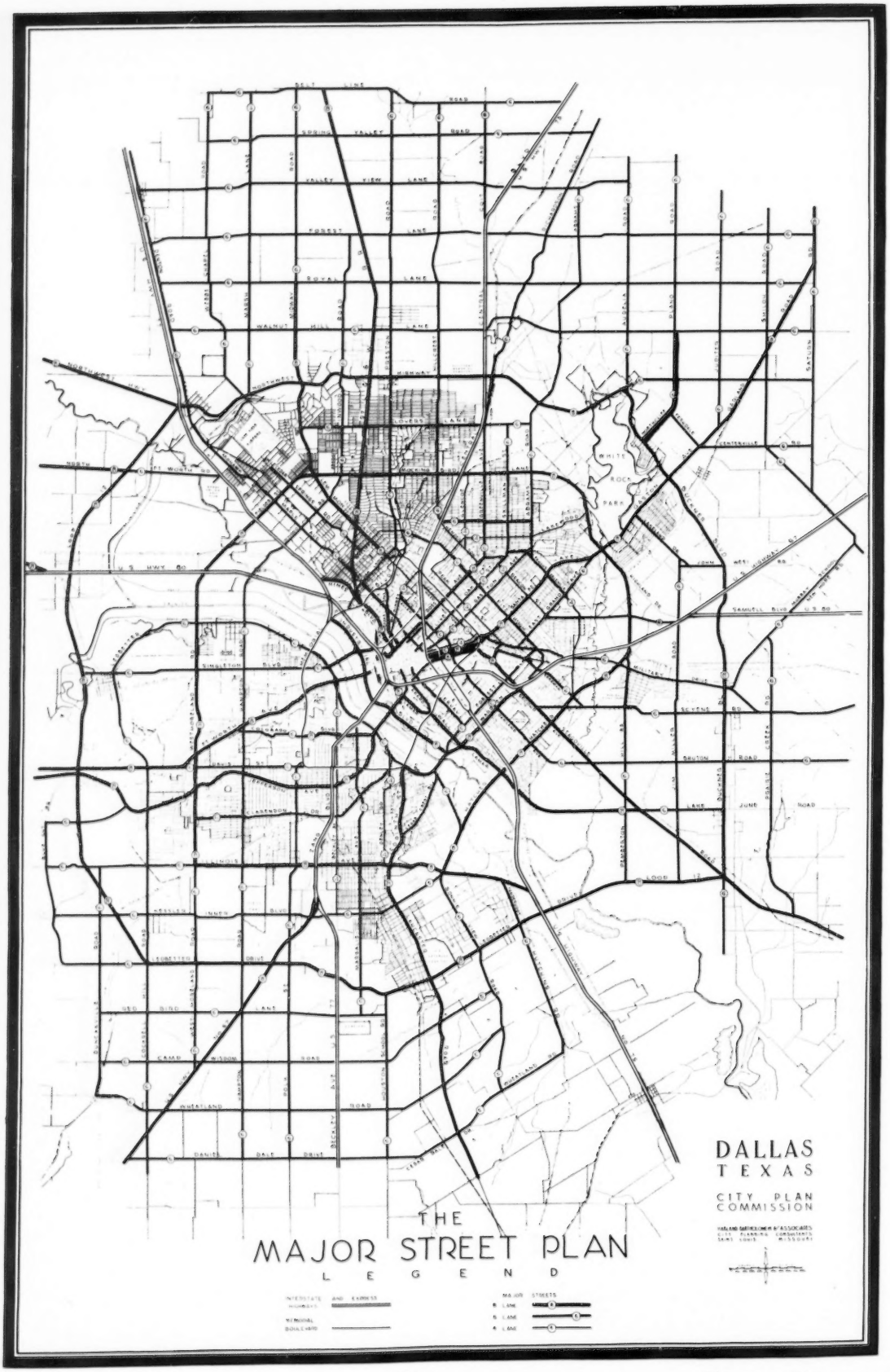

DALLAS
TEXAS
CITY PLAN
COMMISSION
THE
MAJOR STREET PLAN
LEGEND

Fig. 2

SHEET 1 OF 19 L-2

Dallas Metropolitan Traffic Survey STREET LEMMON

ALLOCATION OF TRAFFIC TO MAJOR THOROUGHFARE SYSTEM

PASS VEH. INT.

ORIGIN	DESTINATION	NUMBER OF VEHICLES	SECTION OF STREET 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
012	103	454	
012	106	400	
012	114	442	
012	115	862	
012	132	1049	
012	152	813	
013	116	426	
013	152	404	
014	107	209	
021	106	414	
031	106	207	
"	117	442	
042	104	199	
	106	416	
	110	855	
	111	844	
	114	442	
	148	606	
	152	403	
	155	808	
	131	414	
	132	616	
043	114	862	
	132	1026	
044	103	454	
	107	418	
	108	606	
	111	645	
	115	1106	
	132	1863	
051	132	414	
052	106	416	
SHEET	TOTAL		
GRAND	TOTAL		

Fig. 3

tion of major thoroughfares has not kept pace with the City's growth. The traffic problem is city wide, since many of the major thoroughfares remain rural type, narrow roads in spite of the development adjacent to the streets. This type of street cannot accommodate the demand thrust upon it, and, consequently, traffic "spills over" to residential streets. Many of our existing problems were created by the fact that the major thoroughfare plan was never officially adopted.

Because of all of these factors Dallas found it necessary to review the original thoroughfare plan and to set up a realistic priority program for future street improvements. At the present time we are in the midst of conducting a comprehensive analysis of our present and future street needs, revising our major thoroughfare plan, establishing new major street standards, and planning for a network of expressways throughout the metropolitan area.

O-D Survey

Before starting such an undertaking, the City recognized it lacked adequate basic traffic data. In 1950 at the request of the City, the Texas Highway Department, Bureau of Public Roads, and County of Dallas joined to conduct an origin-destination survey. (Fig. 1) This survey covered a metropolitan area of 215 square miles. In addition, an external origin-destination survey was made around six outlying areas. The origin-destination survey was the standard five percent sample interview type developed by the Bureau of Public Roads. Interviews were made at external stations and the Central Business District had a parking survey and a cordon count. Since the data were to be used for the preparation of a long range street plan, the method of selecting the sample was changed slightly so that a factor for future growth could easily be applied.

In sample selection a complete land-use map was prepared of the entire 215 square mile area. On this map the location of every dwelling and every vacant lot was noted. Future traffic movements, therefore, can be obtained by applying a factor of the potential development of each zone as compared to the number of dwellings in 1950.

Traffic Allocation

Traffic volume counts do not mean much as a guide for major thoroughfare planning in Dallas. Since many of our streets are narrow, traffic "spills" into adjacent parallel streets, and in many instances motorists make extreme circuitous trips. In an attempt to measure the logical traffic volumes which might use an adequate major thoroughfare system, we allocated zone to zone 1950 traffic to the major thoroughfare system. The major thoroughfare system, as shown in Fig. 2, is the pattern developed several years ago. Minor changes were made where actual development has deviated from the original pattern. To accomplish allocation of traffic to the new street system, each major street and each section of the street between intersecting major thoroughfares were coded by numbers. Traffic between all zones was allocated to major thoroughfares on the most logical route between zones. For this purpose it was assumed that all major thoroughfares were equally good. The form in Fig. 3 illustrates the manner in which record was kept of the zone to zone allocation to the major thoroughfares. Because the IBM tabulations were run separately by type of vehicle, it was possible for us to isolate traffic usage on our major streets by passenger vehicle internal, passenger vehicle external, and truck internal. Fig. 4 shows a summary of the allocated traffic for one street. It is to be noted that we have the traffic volumes for each type of vehicle classification, as well as the vehicle miles of usage. A summary of the average daily vehicle miles allocated to our major thoroughfare system is tabulated below:

SUMMARY OF CITY OF DALLAS AVERAGE DAILY VEHICLE MILES ALLOCATED TO MAJOR THOROUGHFARE SYSTEM

Based on 1950 Origin-Destination Survey

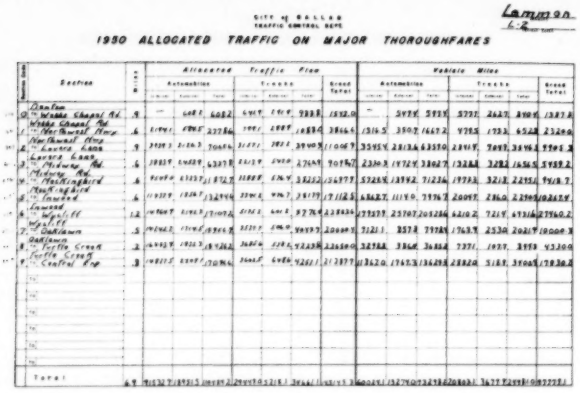
		Vehicle Miles	Percent
Passenger Automobiles			
	Internal	1,819,284	59.6%
	External	611,196	20.2
	Total	2,430,480	79.8
Trucks			
	Internal	432,448	14.2
	External	183,106	6.0
	Total	615,554	20.2
	Grand Tot.	3,046,034	100.00

Total miles of major streets—446.6
Average vehicle miles per mile of major street—6,800

A flow map of the allocated traffic on the major thoroughfare system is shown in Fig. 5.

Street Deficiencies

A logical priority program for street improvement would be to construct first those streets where existing capacity is inadequate. The size of that street should be large enough to accommodate the present, as well as, the future predictable traffic volumes. For each major thoroughfare in the city, an evaluation sheet was prepared which indicated the right-of-way width, street width, and other pertinent data. (Fig. 6). The theoretical maximum hourly capacity for each existing street was computed, based on the existing street width. This was compared with the maximum hourly allocated


CITY OF DALLAS
TRAFFIC CONTROL DEPT.

Lemmon
L-2

1950 ALLOCATED TRAFFIC ON MAJOR THOROUGHFARES

Fig. 4

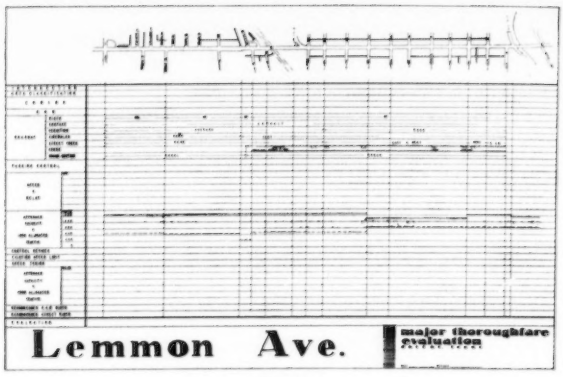


Fig. 6

traffic on each section of the major thoroughfare system. The evaluation sheet indicates the resulting deficiency or surplus based on 1950 levels. A flow map has been prepared, as shown in Fig. 7, indicating the capacity deficiency or surplus of the major thoroughfare system.

1975 Traffic Predictions

While this method is a guide for recognizing those locations where existing streets are inadequate, it renders no assistance in determining the street width needed for future traffic volumes. Future traffic volumes and characteristics will be influenced by increased population, future retail and industrial areas, and by a network of expressways. Our next analysis will be the study of the 1975 desire line pattern, which will be made after expanding the 1950 O-D date to 1975 levels, based on estimated future population in each survey zone. To this will be applied a factor representing the trend in the increasing number of vehicles per capita and the increasing number of miles per vehicle per year. Superimposed over the pattern, thus obtained, will be the influence of added retail areas and industrial areas which are or are planned to be in existence since the completion of the 1950 survey. The City Plan Department is making all the necessary expansions, considering existing zoning, land use, and other planning factors. When the future major desire lines are developed, a network of expressways will be laid out to serve as closely as practical their centers of gravity. The future arterial system, therefore, will be composed of a network of major surface streets with a strong pattern of expressways superimposed over it. Included with the expressways will be a limited access ring around the Central Business District.

The allocation of 1975 traffic to the entire arterial network will require several steps. First, for each zone-to-zone movement, we will compute the percentage of traffic which might be expected to use an expressway. That portion will then be assigned from its origin to its destination via a major thoroughfare, the expressway, and a major thoroughfare. The remaining portion will be allocated to the most direct major thoroughfares between the zones. The completion of this traffic assignment will result in an estimated

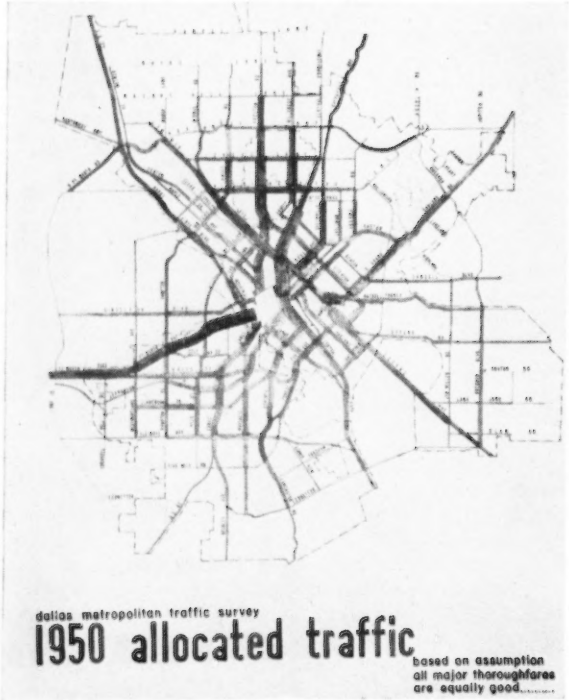

dallas metropolitan traffic survey
1950 allocated traffic
based on assumption all major thoroughfares are equally good

Fig. 5

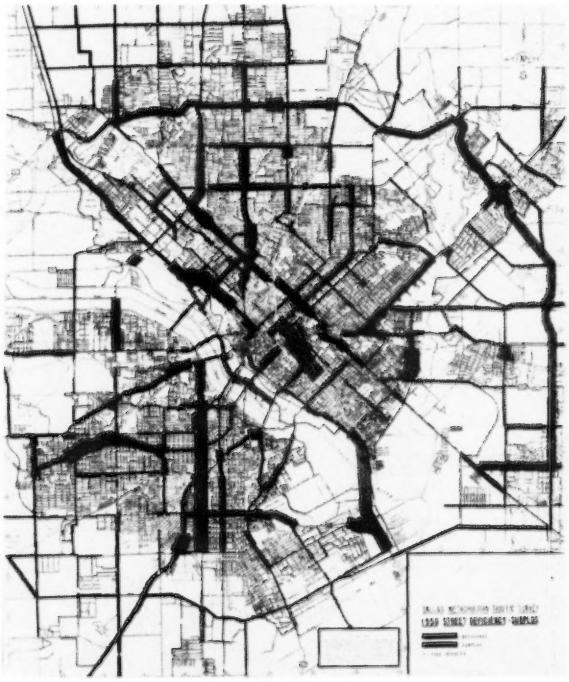


Fig. 7

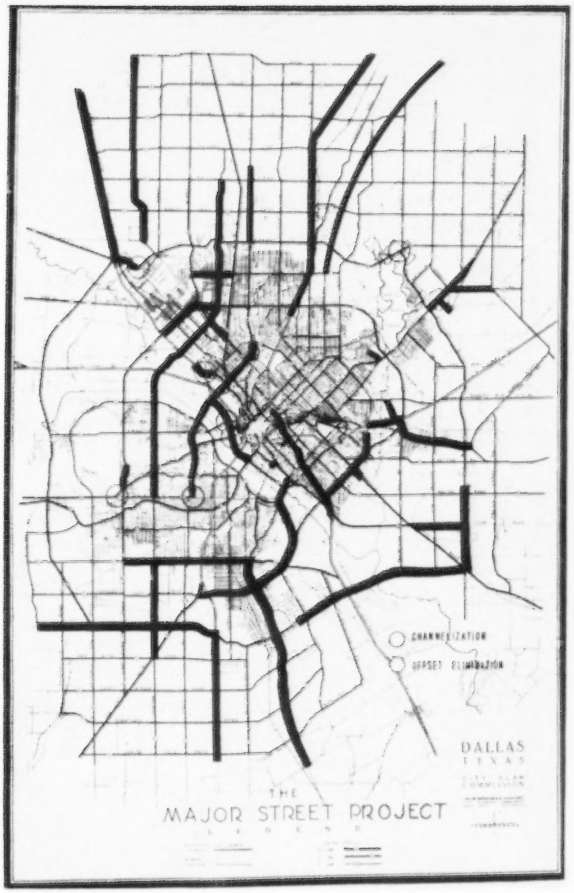


Fig. 8

1975 traffic flow over the entire arterial system. It will indicate the influence of a network of expressways added to a network of major streets. By comparison of both the 1950 and 1975 allocated traffic, sufficient data will be available to guide determinations of street widths to accommodate both present and future volumes, as well as the establishment of a priority program of street construction.

FINANCING

Long before this plan is completed, it is apparent that the City cannot finance street projects as fast as deficiencies present themselves. City officials and civic leaders have recognized the only alternative is to obtain some type of supplemental financing to accelerate the rate at which improvements can be accomplished. Early this year more than 50 officials and civic leaders began a study of this problem by making a trip to Los Angeles to investigate the traffic benefits resulting from the method of financing adopted in California in 1946 through means of the Burns-Collier Act. Since that time they have investigated various financing methods of other parts of the country and are evaluating them to determine whether or not they are applicable in Dallas. This group will continue its research and ultimately will make the necessary state-wide recommendations which will result in supplementary money for street construction purposes. It is our objective to have this phase completed when the Master Traffic Plan is completed.

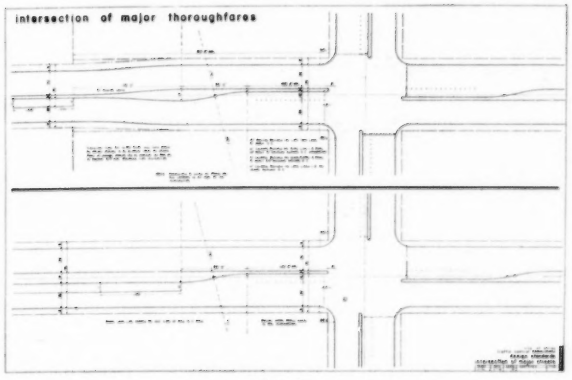


Fig. 9

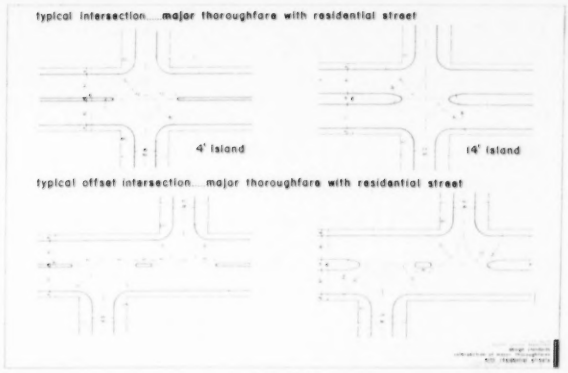

typical intersection... major thoroughfare with residential street
4' island
14' island
typical offset intersection... major thoroughfare with residential street

Fig. 10

PUTTING THE PLAN TO WORK

Street Projects

Even before the completion of the plan, great strides are being made in Dallas for street and highway improvements. There are numerous projects by the State Highway Department, the County, the City, and joint ventures between the various agencies which are now or soon will be constructed. At the present time the City is working on plans for 27 miles of street financed by a 9½ million dollar bond issue. The County and State are working on plans for 48 additional miles of street totalling 14,000,000. Within two years then, 75 miles of street will be improved. Many of these projects are under construction at the present time. The State Highway Department and the City have completed three miles of expressway and will have an additional three miles opened within a few months. Within a two year period more than 11 miles of expressway will be opened on one route. A second expressway route is being investigated at this time. The map in Fig. 8 illustrates the projects which are under way or planned. All of the projects are on the major thoroughfare system. It is to be noted that even though the major thoroughfare plan was not officially adopted, that it has been used in the development of the City in most instances.

Street Standards

Experience has proved that the 56 ft. roadway established as our major street standard, breaks down completely under heavy volumes of traffic at signalized intersections. Accident experience is high where left turn movements are high. Because of these facts we have adopted new street standards and are including these standards on most of the State, County and City projects which are now being constructed or planned. As a general rule, all major thoroughfares will be divided roadways either 30 or 32 feet wide separated by a median island of 4 feet. The narrow median strip has been

selected because it is the maximum which can be provided on the 80 foot right-of-ways along our major thoroughfares. (Fig. 9) At the intersection of our major thoroughfares we are seeking 90 ft. right-of-way, so that a left turn lane can be added. Island openings and jogs in streets are treated with the standards as shown in Fig. 10.

Coordination

By close cooperation between the City Plan Department, the Public Works Department and the Traffic Control Department, we are able to achieve many important benefits before projects are started. As an example, most zoning changes in which retail business is requested, require a special permit which must be approved by the City Planning Department. That department then seeks the recommendations of the Public Works and Traffic Control Departments. On all new developments for shopping centers we are requiring additional right-of-way to accommodate a well designed major thoroughfare, and at the same time, we are obtaining off-street parking space on designs which minimize traffic confusion. On the following slides I will illustrate the traffic benefits which can be obtained through the close cooperation of the developer with the city officials.

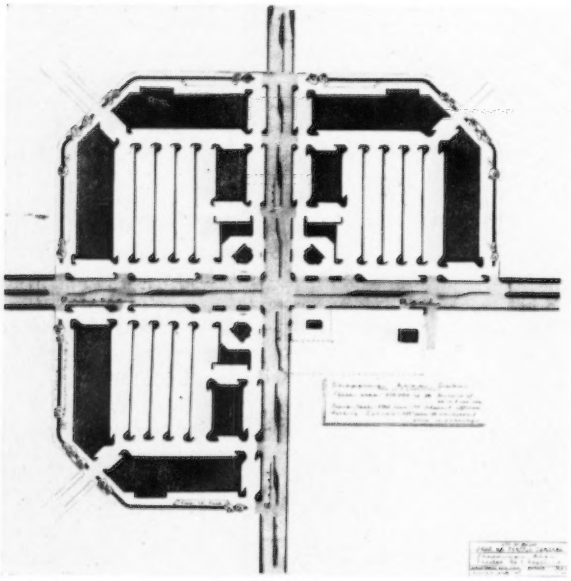


Fig. 11

In Fig. 11 is illustrated a shopping street at Preston Road and Royal Lane. Approval of the site plan included adequate right-of-way for the major thoroughfares as well as specific locations where driveway entrances and exits would be permitted to the shopping center. In-this shopping center, the all-day parkers are provided off-street parking behind the business establishments. With such an arrangement, they do not interfere with customer parking. Shadowed left turn lanes are provided on the major streets. Entrances on one side of the street must conform with those on the opposite side. The plan of the entire lay-out has been prepared before leases are made, so each businessman has indications of the type of traffic control which will be in that neighborhood. Curb parking will not be permitted on either side of the major thoroughfares through this shopping center.

In Fig. 12 is shown expansion of an existing well-planned shopping center and the relationship to the major street system. It is proposed that Zangs Blvd. be converted to an expressway. In this illustration is shown the traffic treatment

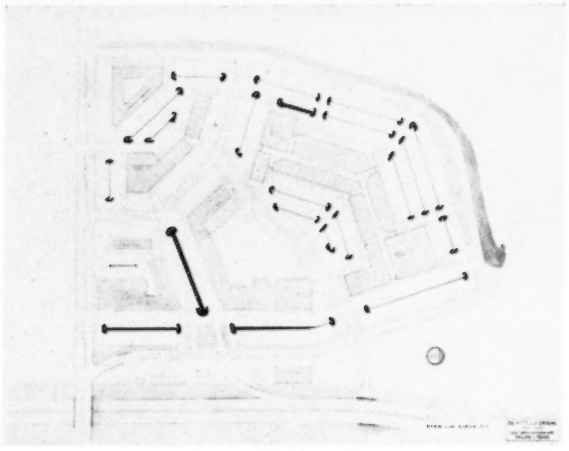


Fig. 12

that will be afforded this area by the expressway, as well as by the divided roadway treatment on the major cross street. Special attention has been directed to the circulatory flow designed into the village which will separate traffic through the village from those vehicles which are parking and unparking. This village, similar to most new villages, has separate parking areas for the merchants and their employees, so they will not interfere with customers.

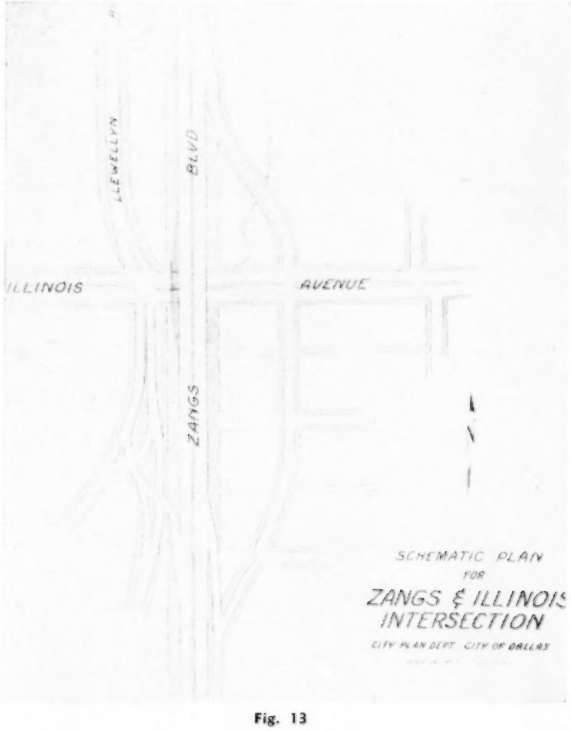


Fig. 13

In this same area—at Zangs and Illinois, Fig. 13 shows how a new street was put into an area so that a future expressway could be accommodated.

One-half mile to the south, an expressway scheme has been prepared (Fig. 14). Now all building permits must be in conformance with this plan. Figs. 12, 13 and 14 indicate one way in which a plan can be put into effect on piecemal day to day basis. The important item, however, is that there is a plan.

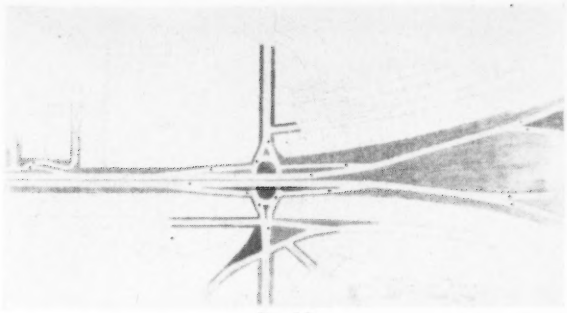


Fig. 14

The shopping center at Lemmon and Inwood (Fig. 15) had adequate right-of-way, but the location of entrance and exit driveways were contingent upon our major thoroughfare design. Parking provisions for employees are in the rear of commercial frontages. Parking will not be permitted on major streets in front of the village.

Fig. 16—Lovers Lane and Inwood. This village was developed before our practice of coordinating the design with major thoroughfares. Being a well planned shopping center, however, construction of a divided major thoroughfare, now being paved, was designed to fit the village.

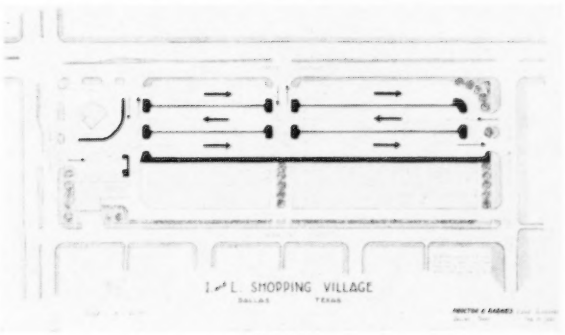


Fig. 15

Fig. 17—Northwest Highway and Garland Road—illustrates where 120 ft. of right-of-way was required for the major thoroughfare. In addition, a service roadway was required to be built adjacent to Northwest Highway, in order to conform to conditions of a proposed industrial site adjacent to the shopping village.

There are many other ways in which some day-to-day activity can convert some part of a traffic plan to reality. As an example, it is a requirement in Dallas that all building permits, other than residential, be approved

Fig. 16

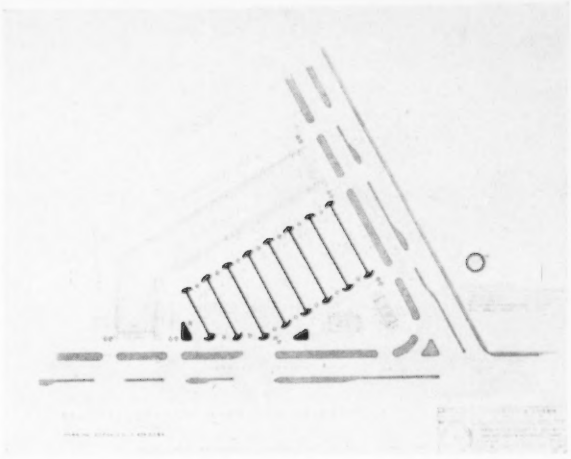


Fig. 17

by the Traffic Engineer. Since many of our streets are without curbs, we require curbs to be put in place as part of approval. The location of the curb is on the line of the future street width. Driveway entrances and exits, as well as truck docks, must meet city standards. Head-in parking, which is prevalent throughout the city, is abolished through design. In addition the Traffic Control Department has the opportunity on the construction of new streets to incorporate curb-cut standards to the street design. An illustration of this method of putting the plan to work is in a street widening project which will soon be under construction. (Fig. 18). On Lancaster Road property acquisition was required along its entire length to make a 90 ft. right-of-way. In the purchase of property, land owners were shown specifically what the final road would be, where curb openings would be permitted and that head-in parking, the prevalent practice on that street, would be abandoned.

Channelization

Many channelization projects are included as part of, or supplementary to, many of our current street projects. Shown in Fig. 19 at the Ft. Worth Cut-Off and Sylvan, a new divided roadway is being constructed on Sylvan. Where it crossed Ft. Worth Cut-Off, now the heavily traveled thoroughfare with a 40 ft. pavement, plans have been made for the channelization of the Cut-Off through Sylvan. This design will minimize much traffic confusion and accident hazard which would be created if the new roadway were permitted to cross without the Cut-Off being channelized.

Fig. 20 illustrates a channelization that has been incorporated as part of the Lancaster Road design.

Fig. 21 illustrates a channelization of an extremely high accident location at Ft. Worth and Davis. This channelization will be accomplished within a year and will fit the ultimate roadway widening of Ft. Worth Pike. It has been given a high priority because of its high accident experience. It is one of many joint city and state projects.

Parking

In all of the newly developed areas of the City, parking does not constitute a serious problem, since all new shopping centers have adequate off-street parking. Zoning requirements, likewise, require off-street parking for all new buildings. In the Central Business District, however, there is a critical deficiency in parking spaces, even though we have in excess of 13,000 off-street spaces. Private enterprise has

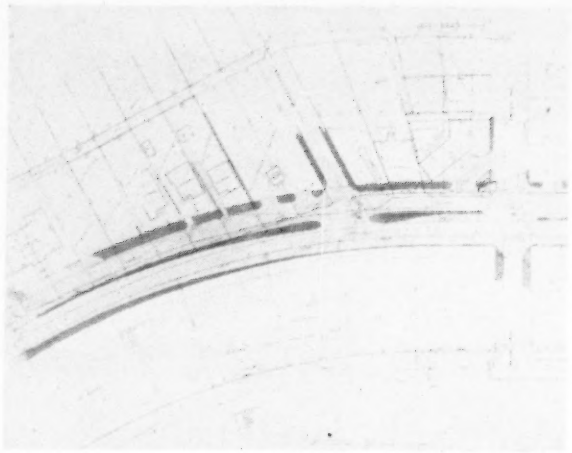


Fig. 18

shown that it would have provided more than 3,000 additional off-street spaces, except for the steel shortage in the past two years. Private enterprise also has expressed willingness to supply a large size fringe parking area. One currently proposed contains 12 acres. The most serious parking problem is in our older established outlying shopping areas where provisions were not made for off-street space. In

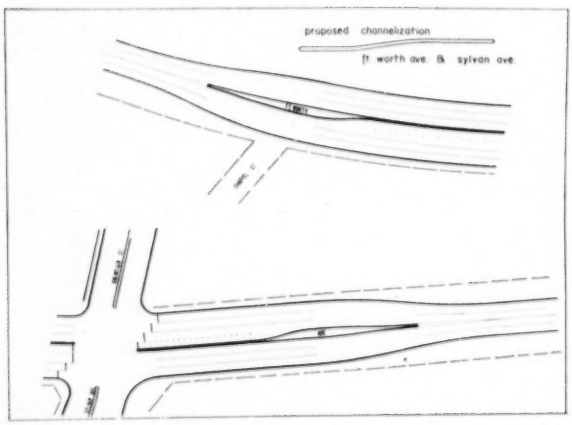


Fig. 19

these areas some businesses are obtaining additional off-street space, but the problem never will be solved until the merchants have the ability to create parking districts or similar device for condemning property for parking.

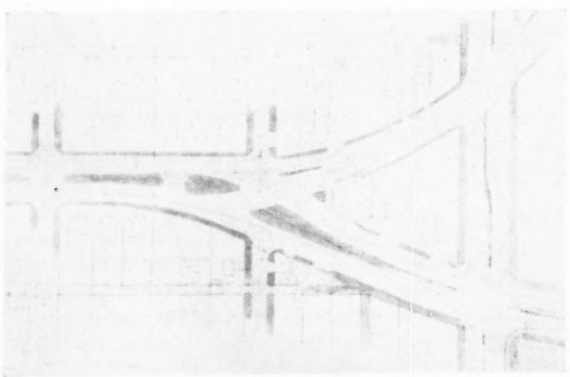


Fig. 20

Fig. 21

Central Business District

Included in the over all traffic plan for the city is a ring of expressways encircling the Central Business District. This loop will connect with the all future expressways serving the area. All surface streets in the central area will serve as feeders.

We have completed a preliminary scheme for the loop, have developed a network of one-way streets, have reviewed all signilization changes needed, and prepared a list and drawings of all street job corrections required in our Central Business District. Within one month, all these plans will be subjected to review and comment by all officials and civic bodies.

COORDINATION

The traffic problem can be solved when there is close coordination between all official families as well as the general public. It is my opinion that Dallas is making great strides in its traffic plan as a result of such coordination among the Public Works Department, City Plan Department, and Traffic Control Department. At the present moment we are working under a serious handicap, because of the extreme rapidity of the City's growth and the fact that we have not yet completed our entire traffic plan. There also is close coordination between the County and State Highway Department on all projects which are within the city limits.

Public support and leadership for all programming and planning is available through the well-organized Citizens' Traffic Commission. Represented in membership of this group are members of all civic and official organizations, including our Chamber of Commerce.

When the traffic plan is finally completed, it will be presented to all civic organizations for their support. At that time all organizations will be working toward a common plan which cannot help but succeed. It is democracy in action.

MEMBERSHIP INFORMATION

may be obtained by writing to:

Executive Secretary
Institute of Traffic Engineers
Strathcona Hall
New Haven 11, Connecticut

23rd Annual ITE Meeting Paper

No. 15, Presented at the Second Technical Session which was devoted to the subject, Developing the Traffic Plan, September 10, 1952, at 9 A.M.

Expressways in Relieving Urban Traffic Congestion

By Joseph Barnett

Chief, Urban Highway Branch, U. S. Bureau of Public Roads, Department of Commerce

AN UNDERSTANDING of the role of expressways in the relief of urban traffic congestion requires a comprehension of the fundamental reasons for congestion. It is trite to say that urban congestion is caused by too many vehicles using streets designed for the horse and buggy age. The causes of congestion are much more profound than that.

One of the most important factors in the proper operation of a city, and one which has an important effect on its economic life, is transportation. Transportation is the movement of people and goods. People and goods are transported chiefly by motor vehicle and its efficient or inefficient operation very well determines the operation of the city as a whole. An exception is the subway system in a few of our large metropolitan cities, but even here stagnation develops with motor vehicle congestion. Congestion occurs because the people-miles of travel and the ton-miles of goods hauled are too much for the streets and other highway facilities to handle them. The upsurge in the number of vehicles and in the vehicle miles of travel since the end of World War II has been so rapid, particularly in trucks, that it can be considered explosive in character. From 35 million vehicles ten years ago about 52 million were registered at the beginning of this year. From 333 billion vehicle miles ten years ago we now travel 500 billion vehicle miles annually. This explosive upsurge came at a time when our highway systems were in neglect to varying degree because of the necessity of prosecuting a war and we did not have the time to bring our highways up to adequate standards to satisfy *normal* traffic needs and normal traffic increases before this surge was upon us. The States and cities have done a heroic job in improving our streets and highways with deflated dollars in the face of rising costs, but our problems are not solved by any means.

The ability to handle the required vehicle miles of travel is measured by the capacity of streets and highways. In rural areas solving the problem of additional travel is relatively simple. Highways not previously used to capacity can accommodate more vehicles. Overloaded highways can be widened or their capacity increased by various means known to highway engineers. Where this is not practicable, additional parallel highways can be constructed. In cities the problem is not that simple. It is not easy to acquire continuous property which is not covered with buildings, the cost of which is not only prohibitive but whose destruction develops serious opposition. Furthermore, even if it were possible to provide additional streets, that is a poor solution because unlike highways in rural areas the ability of a street to handle traffic is determined not so much by the design of the street itself as by the ability to handle the traffic through the numerous intersections. Additional through streets create additional crossings which are impediments to through traffic. Many of our cities have too many streets now. An encouraging trend in urban redevelopment is the consolidation of several square blocks of property into one area which includes the interior streets and the planning of the area to provide border streets for through travel and noncontinuous streets for service only.

The arterial streets of our cities try to serve many functions and serve no function well. They provide for arterial route traffic which wishes to travel fast without stopping. They serve local traffic which wishes to travel short distances not necessarily at high speed but without too much delay. They also serve local shopping traffic for these arterial streets are generally zoned for business because it was rightfully considered poor planning to encumber the residential areas to the rear with commercial or industrial development. Local shopping traffic simply wishes to pull up to the front door of a store and leave the vehicle in front of it while shopping. These arterial streets must also serve mass transit, for they also are the logical places to locate trolley cars and buses which are not desired by the people in residential neighborhoods. Traffic crosses at cross streets and pedestrians cross everywhere. The arterial streets of most of our cities are insufficient and difficult to control. With their uncontrolled roadside businesses and blatant advertising signs vieing with one another for the attention of travelers, they present an appearance which is far from a credit to our communities. The accident experience is high and the capacity is low. It does not take much volume to exceed the capacity, causing first a general slowdown and in extreme cases, complete stoppage.

One obvious and desirable solution is the provision of expressways which permit uninterrupted flow of through traffic and which, to a great degree, serve local traffic and mass transit. With through traffic removed from existing arterial streets they can revert to their intended purpose of serving adjoining neighborhoods. Many a local businessman who has protested the removal of through traffic from his street found later that local people returned to buy because they no longer had to battle through traffic to reach his store.

The location and design of expressways is a process involving mature consideration of many factors because they can have a profound effect on city development. Decisions must be based first on traffic needs. These needs cannot be adequately estimated without a factual survey of the origin and destination of traffic. The judgment and experience of city engineers can be of great assistance but such judgment is infinitely superior when based on factual information regarding transportation needs. We have learned a great deal in the last 10 years on how to measure these needs at little cost. The small sample survey today is a vast improvement over the laborious counting of traffic of a decade ago which resulted in voluminous data which could not readily be analyzed and which did not tell where traffic came from or where it was going. We now know, for example, that in many cities about 50 per cent of vehicles in the downtown area have no business there and do not stop there but are forced there because that is where the through route is located. The techniques of the small sample survey are continually being improved and are now an invaluable tool in learning the facts regarding traffic. Comprehensive travel studies showing passenger movement by transit, private vehicle, and taxi, and truck movements as well, have been made in 93 of the larger cities. Less intensive surveys in smaller cities number in the hundreds. Great strides have also been made in analyzing the capacity of various types of facilities to handle the traffic which is imposed upon them. The Highway Capacity Manual, prepared by a committee of the Highway Research Board, is not a theoretical discussion but an analysis and conclusion based on traffic volumes measured on roads, streets and intersections all over the country under actual use. Charts simplifying application of the data to traffic light controlled intersections are given in the February 1951 issue of PUBLIC ROADS. Both can be procured at the Government Printing Office. The capacity of expressways is high. It can be as high as 1500 to 2000 passenger vehicles per hour per lane with each truck in the traffic stream equivalent to 2 to 4 passenger vehicles depending upon the steepness of the profile. Arterial streets as now constituted have only a fraction of this capacity, sometimes as low as 200 or 300 vehicles per hour per lane, even when they are not overloaded to a point of severe congestion. A 6-lane expressway with full control of access and grade separations at important cross streets can accommodate traffic more expeditiously, with a fraction of the number of accidents, and less wear and tear on drivers' nerves than 4 or 5 streets each with the same width of pavement as the expressway. And people using the expressway can travel the same distance in half the time.

We also know a great deal more about analyzing economic benefits to road users for various types of improvements. The annual benefits to road users are related to the annual cost of an improvement in much the same manner that any business relates its profits to invested capital, the profits in this case being benefits to road users. Expressways in urban areas rate very high in this regard, despite their comparative high cost, because benefits to road users in avoiding stops, decreasing cost of car operation, and saving in time mount rapidly.

An excellent analysis of this type was made by Professor Ralph A. Moyer of the Institute of Transportation and Traffic Engineering of the University of California. In a paper entitled "Effect of Freeways and Expressways on Transportation Costs", presented before the section on City Planning of the Commonwealth Club of California on April 3, 1951, Professor Moyer showed that the ultimate savings or benefits to users of urban freeways is about 4 cents per vehicle mile when combining savings in vehicle operating cost savings, and accident cost savings. Professor Moyer capitalized these savings over a period of 30 years at 3 per cent interest and arrived at the conclusion that there was justification in spending $5 million per mile where the expressway carried 20,000 vehicles per day or $20 million per mile for 80,000 vehicles per day; Professor Moyer assumed average speeds of 20 miles per hour on city streets and 40 miles per hour on freeways in California. These are fair averages for existing conditions but fail to take into account the increased congestion and lower average speed in existing streets had California not embarked on its vast program of freeway development. Also, he was conservative in assuming a 30-year amortization period.

Traffic need is the most important element in determining location and general design of expressways but it is not the only one. Since the pattern of arterial routes is the backbone of the city plan, it must be coordinated with all other parts of the city plan. A poorly located expressway can create additional problems in transportation if it does not fit the plan for distributor streets and potential parking areas. It can disrupt the neighborhood features of the city plan by cutting through them instead of desirably acting as a divider between neighborhoods, particularly those with different land uses. That is why we in Public Roads encourage State highway officials to cooperate with city officials.

There are other reasons also for such cooperation. One is finance. The cities which have thus far made appreciable progress in constructing arterial routes are those who do not wait for full financing by the State and Federal governments but contribute their own funds also. Such contributions take many forms from constructing expressways with city funds alone to sharing in the purchase of right-of-way.

Cooperation of city or county, or both, is needed to reduce the wasteful practice of buying land with buildings thereon when it could have been purchased as vacant land. We should not wait to buy right-of-way just ahead of construction. The vacant land should be bought or in some other manner reserved as soon as the location and preliminary design are decided. Construction rarely can proceed on the entire length of an expressway at once and the entire character of the land on a continuous chosen line can be changed from an open area to a densely built-up area in but a few years. The administrator has a difficult decision to make in the use of current funds which never are enough. Shall he devote funds to the purchase of right-of-way for future construction? He knows this results in long range economy but the pressure to meet immediate traffic needs by construction usually is great enough to force him to devote all availbale funds to early construction. A compromise is feasible. The administrator would need only a small percentage of current funds for the purchase of right-of-way for future construction if he devotes these funds to the purchase of vacant land only. As a general rule buildings are not demolished to construct other buildings where vacant land is available nearby. Thus land with buildings is not likely to have an abnormal rise in value in the few years to the time of construction and its purchase can be deferred. Land without buildings can have a tremendous increase in value by buildings constructed thereon and large savings can be effected by purchasing the land while vacant. The boundaries of the initial purchase will be irregular but

there is no serious objection to this. Some States require changes in procedure and possibly changes in law to purchase right-of-way well in advance of construction but the saving in so doing, particularly in urban and suburban areas, is so great that the effort is justified.

Another reason for cooperation between State and city is the need for clearing the right-of-way. General dispossession of building tenants is no longer tolerated and progress in preparing the right-of-way for construction requires the active interest and assistance of city officials. Often this fits in with some resettlement or slum clearance or urban redevelopment program and the two can go forward together when neither can be developed separately.

We cannot adequately discuss expressways without touching upon the important elements; control of access and reduction in accidents.

Every city probably has one or more examples of a fine highway constructed on new right-of-way, possibly as a belt route, which soon was cluttered with such an assortment of gas stations, eating stands, and other roadside businesses that the highway soon became just another street with low capacity and a high accident rate. This is followed by *another* searching for a new route and *more* funds to construct still *another* belt route. How long are so many States and cities going to follow this wasteful practice of allowing streets and highways to become obsolete due to the ravages of the very roadside businesses which depend on traffic for their sustenance? Why should a city encourage deterioration of long established businesses along existing streets due to competition of roadside businesses along the new route? By fully controlling access along new routes many States and cities have with this one stroke insured the permanence of the new routes, subdued opposition of business operators along the old routes, and reduced the accident rate.

The reduction of accidents is no minor item. It stands high in public thinking and monetary saving resulting from accident reduction is startling in amount. Using National Safety Council figures for 1950, the cost of property damage due to motor vehicle accidents was 1¼ billion dollars. Adding the cost of loss of wages, medical expenses, and insurance overhead brings the total to over 3 billion dollars. This amounts to two-thirds of a cent per vehicle mile. Expressways with control of access have less than half the death rate of the national average so it is conservative to count on a saving in accident reduction alone of one-third cent per vehicle mile. If we assume a highway with 10,000 vehicles per day, an interest rate of 2½ per cent and 40 years for amortization, this reduction justifies an additional expenditure of $300,000 per mile. For 40,000 vehicles per day it amounts to $1,200,000 per mile. I am not referring to total cost of construction but to the additional cost justified by the reduction in the cost of accidents resulting from providing control of access.

In discussing the role of expressways in relieving urban traffic congestion a word of caution is in order. In city planning and administration the improvement of one phase or one department alone does not insure a better city. Continuous effort is needed in all phases of city planning and in all departments of city government. So it is with traffic congestion. The construction of expressways alone will not adequately reduce congestion. The attack must be made on a broad front and many other improvements must be made along with the construction of expressways. Among these are the following:

The improvement of distributor streets: Complete transportation includes the final delivery of people and goods to homes, stores, and factories. Vehicles leaving the expressway must be distributed widely onto streets as close to final destination as possible. These streets must have sufficient capacity to handle the traffic normally using them in addition to that deposited by the expressway.

The solution of the terminal problem: Complete transportation also includes adequate parking and off-street loading facilities for motor vehicles. Except for tradition, there is no more reason for using the public streets to load and unload over-the-road trucks than there is for using streets to load and unload railway freight cars. It isn't very long since streets were used for loading and unloading freight cars. Economic and other pressures have caused the abandonment of this practice as they are gradually causing the elimination of street use by railway train traffic. Off-street loading docks for trucks have advantages other than the relief of congestion on the streets. Management has better control and more efficient operation when the trucks can maneuver without hindrance and docks are located to fit interior plant operation. And pilferage is drastically reduced because it is very difficult to safeguard goods on a public sidewalk. These factors explain why new manufacturing and warehousing plants are located where they can be enclosed in a protective fence, there is space to construct maneuvering areas for trucks and locate loading docks properly, and parking areas can be provided for workers' cars. And they explain also why commercial buildings in cities are providing off-street loading docks in proper relation to freight elevators even where zoning does not require it.

The improvement of the mass transit system: It is hard to conceive of all workers being transported to and from their places of business by private automobile. The improvement of the mass transit system can go a long way toward relieving traffic congestion; first by improving the type of bus operation to reduce conflict with other traffic, and second, by encouraging its use in competition with the use of private cars.

Bus drivers in many cities often find bus stops illegally occupied by other vehicles and are forced to stop a considerabe distance from the curb. Following vehicles slow down or stop or, what is worse, try to pass the buses, disrupting vehicles on all traffic lanes. Bus drivers cannot be blamed for this type of operation. They would be inhuman if they did not become sick of the continual abuse of the "No Parking, Bus Stop" regulation which prevents buses from swinging to the curb and under the pressure of time schedules soon form the habit of stopping partly in the through traffic lane. There is an encouraging practice of providing bus bays so designed that their use by private automobiles is difficult and requires a glaring abuse of the traffic regulations. Lake Street in Rochester has the parking lane on the far side of a shallow drainage ditch. This has many destirable features as far as the parking lane is concerned but it has the added advantage of being pnysically separated from the bus loading zone on line with it at the end of the street. In addition, the bus loading zone is paved with brick. I have observed a high degree of compliance with the parking regulations on this street. Bus drivers find it easy to and continually do swing their buses into the bus loading area, keeping the traffic lanes free for moving vehicles. Additional experiments of this type should be encouraged.

(Continued on page 172)

(Continued from page 156)

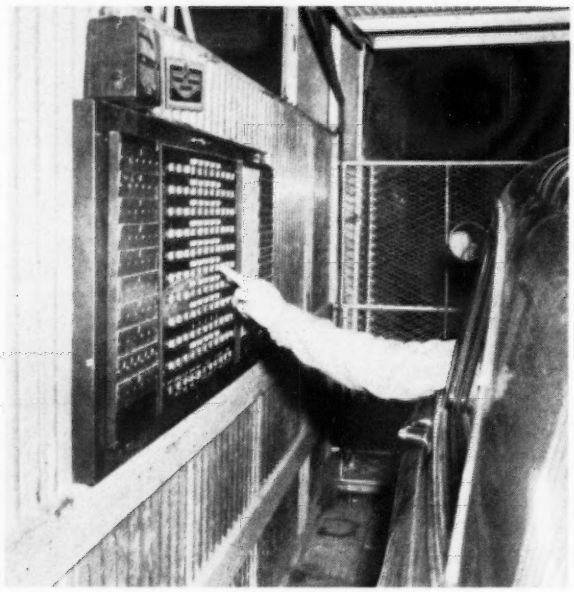


Fig. 5
Elevator Control Panel with call lights.

Accurate control of each parking space is thus maintained at all times and confusion and lost time in searching for cars is eliminated. An intercom system between checker, elevator and cashier is also in operation as an emergency.

The time required to park a car from the moment of entry, assignment of space, lifting and parking and returning the elevator to the ground floor ready for another car averages in actual operation about 65 seconds. This, of course, is average for all floors, upper floors require slightly more time and lower floors slightly less. It should be noted that the elevator may bring a car down on its return trip. Thus, parking one car and unparking another may be accomplished in about 90 seconds.

Three elevator operators, one cashier and one checker can operate this garage easily and efficiently.

After one year of operation it has been found that the elevators and their appurtenances have operated efficiently and dependably with no major breakdowns or repairs. The signal systems for parking and unparking cars have operated satisfactorily; and, once the operating crew has been properly trained, it functions smoothly and effectively. Since this was the first garage of its type constructed, some minor design changes, such as wider stalls and elevator cages (8 feet instead of 7½ feet) pneumatic tubes between checker and cashier for transfer of ticket stubs, and slightly higher elevator speeds have been found desirable. Incidentally, practically no damage to cars has been occasioned even with 7½ foot widths. The wider stalls and higher elevator speeds would increase speed of parking.

The cost of construction of a garage of this type is, of course, relative to variations of construction costs since its construction and location. The total cost of the building including mechanical and electrical equipment, engineering and inspection was $485,702.00 as of March, 1950. This cost translated to cost per cubic foot is 44.8 cents per cu. ft.; to cost per square foot is $6.55 per sq. ft.; and to cost per car space is $1131. These costs do not include cost of land. Operating costs, including power, labor and overhead, average about $4500 per month.

This garage was built by the City of Des Moines, Iowa, on land furnished by the city. The size and shape of the lot precluded the construction of any other type of parking garage. The project was financed by revenue bonds backed by income from parking meters and parking garages. The garage is presently operated by a private firm under contract with the City of Des Moines.

Similar garages under the Browser system are in prospect in Mexico City; Denver, Colorado; Houston, Texas; Chicago, Illinois; Oak Park, Illinois; Louisville, Kentucky; Memphis, Tennessee; Atlanta, Georgia; Tulsa, Oklahoma; Oklahoma City, Oklahoma; Miami and Miami Beach, Florida.

Federal Withdrawal From Gasoline Tax Field Urged

The statement that the "Federal Government withdraw from the field of gasoline taxes as soon as may be consistent with the needs of national defense," as contained in a resolution passed at the 1952 Governors' Conference, was "heartily" reaffirmed by the 11th General Assembly of the States, sponsored by the Council of State Governments, held in early December.

It was pointed out that "the federal gasoline tax is levied upon the American highway user, and our highway system is rapidly deteriorating because the funds needed to develop and maintain a modern highway network are not available."

The General Assembly went on to recommend that "the Chairman appoint at least five members who will be members of the next General Assemblies of their respective states to work with the Governors' Committee on the question of automotive, gasoline, fuel oil and oil tax questions as they relate to the road question of the respective states."

In another resolution, the General Assembly commended the Council's Committee on Taxation of Motor Vehicles (and the National Association of Tax Administrators) for its draft of the suggested new interstate highway use tax law and requested that the committee's report and suggested legislation be distributed to state legislators and administrators. The Rhode Island delegation asked to be recorded as dissenting on this proposal.

The Council's booklet, "Suggested State Legislation Program for 1953", contains a statement that inequities in the taxation of heavy interstate vehicles should be corrected. Other recommendations to the state included: adoption of the Uniform Vehicle Code and Manual on Uniform Traffic Control Devices; establishment of independent Motor Vehicle Departments; adoption of the merit system for personnel of motor vehicle departments and highway patrols; statewide traffic court systems; better highway planning; AASHO size and weight limits and no increases until after completion of the road tests; completion of highway tax structure studies, and if revenues are inadequate, increase the motor fuel tax, motor carrier fees or enact a weight and measure tax.

★ ★ 2 ★ ★

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If you are considering metered parking as a new project; if you plan to add more meters; replace old with new meters, or develop off-the-street parking lots, we urge you to contact MI-CO. We believe our records will prove you cannot buy better meters anywhere at any price.

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Open Discussion

By Lawrence Lawton (Assoc. Mem., ITE)
Engineer of Traffic Design,
Department of Traffic, City of New York

REDUCING ACCIDENTS ON FREEWAYS

DURING THE past several months the local press has featured several spectacular accidents on the New Jersey Turnpike. In my opinion the Turnpike is probably the best road in the country and approaches the ultimate in traffic design. Yet the fatality rate, according to Paul L. Trost, Chairman of the N. J. Turnpike Authority, as quoted in *The New York Times*, November 19, 1952, is 5.8 per hundred million vehicle miles. Although this is considerably lower than the national average of 7.7, must we then accept these accidents which do occur as inevitable?

One of the major causes of accidents on limited access roads is the side swipe. This can happen when a driver in the left hand lane passes a platoon of slow moving vehicles. If one of the slower drivers starts a passing maneuver, a collision may well result.

An answer to this problem is to place directional signals on top of the front fenders. Mounted in this manner, with illuminated faces both front and rear, they would warn a driver coming abreast that the car he is about to pass intends to change lanes.

Several models of the 1952 passenger cars have excellent rear directional signals. However most of the light output seems to be concentrated in a cone extending ten to fifteen degrees from the longitudinal axis of the signal lens. When the driver of an overtaking vehicle is less than a car length behind a vehicle in the right hand lane, he has passed this zone of high light intensity. I believe that minimum standards of light distribution should be set up for turn indicators in exactly the same manner as prescribed for traffic signals.

Rear end collisions are another major type of accident on through highways. Because of mechanical failure or other reasons, a driver may not be able to remove his stalled vehicle from the roadway. This problem is particularly acute at night. It is not obvious, due to the lack of visual depth, that a car ahead is not moving. Of course a sensible driver will flash one side of his directional signals. While this is of some help, it is not a positive indication to a person coming up from behind that he is approaching a disabled car.

A solution to this would be to have both rear directional signals flash at the same time, this would then furnish a real advance warning of trouble ahead. I might add that I converted my own car to this arrangement several years ago.

No device will ever eliminate all highway accidents, the human critter being what he is. However I am convinced that these ideas could materially reduce the terrible toll exacted on our highways.

EXPRESSWAYS IN RELIEVING URBAN TRAFFIC CONGESTION

(Continued from page 169)

Another example is the practice developed in New York City of locating bus stops only at streets where the one-way traffic on the cross street is headed to the left. This has eliminated the type of accident caused by a right-turning vehicle cutting in front of a bus beginning to leave the bus stop and it has reduced the occupancy of the bus stops by other vehicles desiring to turn for they cannot turn right at such locations.

Expressways are adaptable to use by express buses. Express type of bus operation has been talked about a great deal and has even been tried in several cities but its potentialities have not yet been realized because the trials to date have not been truly express type of operation. The trials have generally consisted of limiting the number of stops for pick-up of passengers. While this improves their operation to some extent, these buses have to stop along with other vehicles for congestion and for the ever-present red traffic light. There is not sufficient improvement in that type of operation over normal bus operation to justify the customary extra fare or to encourage the owners of private vehicles to leave their cars home and travel to work by bus. Mass transit operation of buses on existing arterial streets finds itself in a vicious cycle of increasing cost and decreasing patronage. Increased congestion slows buses and increases their cost of operation. Slow operation and higher fares to meet increased operating cost encourage more travelers to abandon buses and use the family car, further increasing congestion and further slowing mass transit. On expressways buses can operate without delays and stops and the time of travel for express buses can be cut down appreciably. This reduces cost of operation, thereby reducing the necessary fare. Improved operation may encourage more workers to leave their personal cars home and travel by bus, further decreasing congestion. Here we have the ingredients for reversing the vicious cycle. Express buses are no detriment to operation of other vehicles on expressways when adequate facilities are provided for stopping clear of through traffic lanes. Furthermore, there is the added benefit of a city not being plagued with the problem of providing all-day parking space in downtown areas for buses, as must be done for most of the private automobiles carrying people to work.

Another item in the broad improvement program is the proper enforcement of motor vehicle regulations. There is little use in providing improved facilities which are abused by the long-term parker, the double parker, and the reckless driver.

And finally, the better use of the facilities we now have: It will take time, in addition to money, to develop expressway in cities. In the meantime, we must live with the facilities we now have. They can be improved in numerous ways familiar to highway engineers. One-way streets, better traffic light control, widening here and there, spot improvements such as channelization and occasional grade separations of important intersections all increase capacity and reduce accidents. These improvements can be made quickly at moderate cost.

Persistent attack on this broad front, expressways along with all these other items, will go a long way to relieve traffic congestion in cities.

TRAFFIC NEWS

Starting Salaries Higher In '52

Starting salaries for 1952 engineering graduates of New York University averaged 9 per cent higher than those for 1951 graduates, with approximately three-fourths of the engineers (73 per cent) entering the employ of private industry.

These figures were reported in December by John A. Hill, assistant dean of the College of Engineering, who conducted an employment survey of last year's class. The average monthly starting salary in 1952 was $328, the survey disclosed, and the range went from $250 to $425.

Dean Hill pointed out that the upward step continued a trend which in each of the last six years except 1949 has produced significant annual increases. Current starting salaries average 45 per cent higher than those of 1947.

"The highest average salaries in 1952 were in the fields of aeronautical engineering, mechanical engineering, and industrial engineering," Dean Hill stated. "The fields with the highest average salaries vary from year to year, however. Our surveys have not indicated that any one field is favored over others on a continuing basis."

The number of graduates entering civil service jobs dropped appreciably from 1951 (16 per cent) to 1952 (7 per cent).

"Probably the reason for this is the sizeable difference between civil service starting salaries and those offered by private industry," Dean Hill explained. "Although a number of government agencies took aggressive action to attract engineering graduates, it does not appear that they were successful, except among civil engineers."

Eleven per cent of the graduates are studying full-time for advanced degrees and 9 per cent are on active duty with the armed services. None of the graduates reported unemployment or non-engineering employment. More than half (55 per cent) took jobs in the New York metropolitan area.

"Jobs were plentiful and well advertised in 1952," Dean Hill said. "There was increased recruiting activity and competition for the services of engineering graduates.

"University agencies such as the NYU Placement Bureau and the faculty of the College of Engineering were instrumental in placing 56 per cent of the graduates in positions. Another 18 per cent found jobs through direct personal inquiry, and 10 per cent located them through newspaper advertisements. Private and public employment agencies helped place 6 per cent of the graduates, and the others obtained positions through family and friends, or engineering societies and publications."

Inadequate Roads Cost N. Y. Motorists Half Billion Yearly

Motorists in New York, like those in every other state, waste millions of dollars a year travelling poor highways. They'll continue to waste this money until they learn that . . . GOOD ROADS IN NEW YORK STATE WILL SAVE 570 MILLION A YEAR.

Three years ago, as New York's 5,606,162 motorists became increasingly disgruntled over highway conditions throughout the state, the Department of Public Works set out to illustrate to the public a few facts about the alarming costs of travel on inadequate roads.

In 1950 the Department completed a road survey which revealed that the existing highway system just wasn't up to the increasing demands on it. Of the 14,321 miles of state highways, 5,996 miles were listed as being over 20 years old, 6,872 miles were less than 18 feet wide, 7,164 were deficient structurally, 5,405 miles were deficient in service, and 6,224 were just plain dangerous.

Poor roads, according to the Department's statisticians were costing the public more than 570 million dollars a year in increased freight rates, bus rates, auto upkeep, gasoline mileage, accidents and insurance rates.

That was the picture three years ago. And at the time engineers estimated it would require 180 million dollars a year for the next twenty years just to bring the state highway system up to adequate standards. But no one came up with a workable plan to raise that kind of money.

The New York Good Roads Association, an organization representing public interest in better highways, started an intense campaign to focus public demand for better roads upon the state legislature. Newspapers, radio and TV picked up the cry, too. So in February, 1952, when an Association-sponsored bill was introduced to create a temporary state commission to study highway financing and to come up with plans for financing rehabilitation of all roads, streets and highways in the State, it was passed by both chambers and signed by Governor Dewey with little or no opposition.

Since the 1950 survey, though, inflation had increased the cost of highway construction by about 20%. Also, motor vehicle registration in the state had jumped by more than a half million, and, because these factors are a governing measure in determining highway needs and the cost of rehabilitation, it was pretty obvious that a re-survey of the State's highway system was needed to discover current deficiencies and long range requirements.

In 1946, the Public Works Department started a program to survey highway needs in every city in the state. This was a separate and distinct program for cities alone, and it was based on a 15-year schedule of construction and rehabilitation at the rate of 20 million dollars a year. Since its inception six years ago, several cities have benefited from new parkways and expressways through and around their metropolitan areas. This program is slated to continue, but inflation and increased motor vehicle registration has changed the construction picture here, too.

In 1949 the Town Highway Improvement Program was started in order to rehabilitate town highways in the State.

These are the "dirt roads" that serve agricultural areas, and they were scheduled to be improved by:

1. Raising the roadbed above grade.
2. Grading backslopes and eliminating brush.
3. Widening roadway to 16 feet.
4. Providing a surface of 12 inches of gravel or other suitable material on the travelled-way.
5. Providing a 5-foot shoulder with 1-foot drainage ditch.

The formula used for allocating state aid among towns was set up like this:

1. Each town is to pay a share of actual cost of the improvement program calculated by taking the yield of 60 mills of full value of real property (outside villages) per mile of town highway, and dividing the yield by a $7000 ceiling. The state is to pay the remaining portion of the improvement program in each town, within the prescribed limits.
2. The ceiling of $7000 is the maximum total improvement cost per mile toward which the state will contribute. Cost in excess of $7000 will be paid for entirely by the town.
3. The state's share which can be paid to any one town is to be no more than 75 per cent and no less than 25 per cent of actual cost, not in excess of $7000 per mile.

Total cost of this program was estimated at $146,400,000. State aid would approximate 50 per cent of this, or $73,200,000. And on the basis of a ten-year program, this would have been a total cost of $14,640,000 a year and an annual state aid contribution of $7,320,000.

But here, again, increased traffic volumes and inflated construction costs had changed the 1949 construction estimates considerably.

A comprehensive survey of the county road system had never been made, and since the Commission was to concern itself with all roads and highways throughout the state, a thorough study of these roads was required.

So, even before the 13-man Temporary Highway Finance Planning Commission was fully appointed, the Department of Public Works started to bring up to date its 1950 state highway survey; to re-evaluate construction costs for the city roads program, and to complete its report on the Town Highway Improvement Program.

Then, through the cooperation of the county highway superintendents, the Department initiated a survey of the county road system.

The Department's bureaus of highway planning, research and statistics, had already developed standards of measurements that would facilitate and standardize an impartial analysis of highway conditions. The ratings of each road mile were set up in six categories: structural adequacy, service, safety, traffic capacity, accident rate and estimated cost of rehabilitation.

On December 4, 1952, Bertram Tallamy, Superintendent of the Department of Public Works, reported the results of the surveys to the Temporary Highway Finance Planning Commission.

According to his statement:

1. There are 6,160 miles of rural state highways that require rehabilitation at a cost of $1,308,000,000 over a ten-year period.

2. There are 406 miles of urban highways (arterial highways), including those in New York City, that require rehabilitation at a cost of $796,000,000 over a ten-year period.

3. One hundred-ninety-two miles of state parkways will cost $195,300,000 over the next ten years. Of this total mileage, 146 miles are to be constructed, 46 miles require widening.

4. There are 8,565 miles of county roads, representing 47 per cent of the total county roads mileage, requiring rehabilitation at the cost of $390,600,000 over the ten-year period.

5. There are 14,314 miles of town roads, representing 26 per cent of total town roads mileage in the state, that require rehabilitation at a cost of $99,200,000 for the ten years.

6. The Public Service Commission Grade Crossing Elimination Program, which was started in 1946, will cost $95,200,000 over a ten-year period to complete 56 locations throughout the state.

The total cost, then, of bringing the highways and roads in New York State up to adequate standards comes to $2,884,300,000 for the next ten years.

Now it's up to the Commission to discover where to get the money and how to budget it.

One of the principal answers, though, and make no mistake about this, is increased taxes. And that may mean more money from gasoline tax, auto taxes and from the truckers, who right now are fighting a weight-distance tax imposed last year.

Of course, when the Commission proposes increased taxes to the Legislature, the old diversion cry will reach an all-time high. For years, automobile clubs, truckers and petroleum groups have accused the State of failing to use present highway user taxes for road purposes. This charge is denied by the Department of Public Works. It points to the fact that actually more money is being made available for road and street purposes today than is being collected totally from all highway user taxes.

Jud Morhouse, Executive Director of the New York Good Roads Association, maintains that the answer to the state's highway program is an informed public. And there isn't a highway official anywhere who doesn't agree. Highway progress, they say, can be made only through public demand.

Right now, of course, motorists are well aware of the fact that it costs plenty to travel the state's highways. The nature of these costs, though, is another thing. And until they begin to realize that the 20 million dollars they waste yearly on increased insurance rates, the 240 million dollars they waste on increased trucking costs and bus rates, and the 310 million dollars they waste on accidents, auto upkeep and gas mileage—totals three times as much as the yearly cost of building better roads—they'll never see the day when they're free of traffic jams and hazardous driving conditions.

Sixty Fleets Win Awards

More than 60 truck fleets in all sections of the country won special safety awards in the 18th annual National Truck Safety Contest, sponsored by the American Trucking Association, Inc.

ITE Calendar

24th ANNUAL MEETING

Hotel Statler
Buffalo, N. Y.

Sept. 27 - Oct. 1, 1953

25th ANNUAL MEETING

Kansas City, Missouri
September, 1954

OVERHEAD SIGNS

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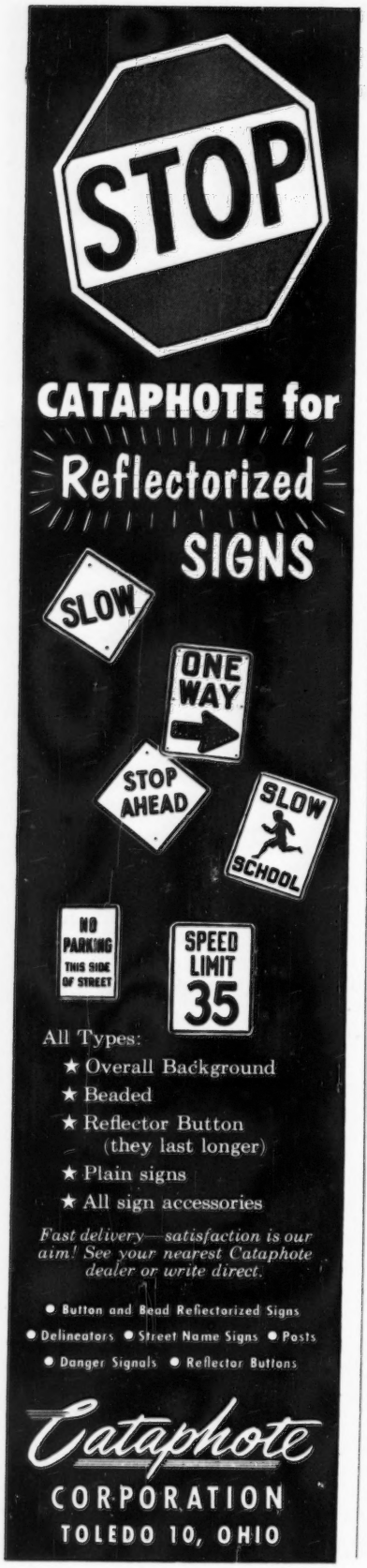

Fifth Annual Illinois Traffic Engineering Conference Held

The Fifth Annual Illinois Traffic Engineering Conference conducted at the University of Illinois in Urbana on December 11 and 12, 1952 was attended by over ninety persons interested in the traffic engineering field. This conference was conducted by the Department of Civil Engineering at the University of Illinois in cooperation with the Illinois Division of Highways, Midwest Section of the Institute of Traffic Engineers, Illinois Traffic Safety Council and the Illinois Municipal League. The conference drew attendance from the States of Minnesota and Indiana, as well as Illinois.

The two-day conference was broken up into two mornings, two afternoons and one evening session. The conference was opened by a welcoming address by Mr. W. L. Everitt, Dean of the College of Engineering, University of Illinois, followed by a talk on "Traffic Legislation" by Phil J. Martin, legal counsel, Chicago Motor Club. After a brief recess, a panel of three experts, each representing one of the three "E's" discussed how we can improve traffic conditions. Panel members were: Matthew C. Sielski, director of the Safety and Traffic Engineering Department, Chicago Motor Club; Harry Porter, Jr., Traffic Engineer of the National Safety Council and Lt. Frank M. Andrews of the Evanston, Illinois Police Department.

Following a splendid luncheon at the Illini Union Building, the second session opened with Mr. A. J. Cope, Statistical Engineer, Illinois Division of Highways, Springfield, Illinois discussing accident records followed by a discussion of high accident locations by Marshall F. Davies, Traffic Engineering Designer of the Chicago Park District. After a brief recess, improvements at intersections were discussed by four speakers. Mr. R. J. Furbeck, Bureau of Design, Illinois Division of Highways, Springfield, Illinois talked on "Geometrics of Intersections", followed by Mr. Albert L. Forde, Chief of the Engineering Division of the Chicago Bureau of Street Traffic, who talked on "Channelization at Intersections". The next speaker was Richard G. Fencl, Traffic Engineer of the Chicago Park District, who discussed "Rush Hour Demands" and the afternoon session closed with a talk on "Markings at Urban Intersections" by Daniel J. Hanson, Traffic Engineer, Chicago Motor Club.

The evening session consisted of a talk by C. C. Wiley, Professor of Highway Engineering, Emeritus, of the University of Illinois, whose topic was "Crazy Corners". After Professor Wiley's talk, a lengthy question and answer period on numerous traffic topics was held followed by a round of very welcome refreshments.

The second morning session was opened by a lively discussion of "Problems of Mass Transit" by Ralph F. Gross, Transit Engineer, of the committee on Local Transportation for the City of Chicago. The other two speakers on the morning session were Lt. William E. Kitch of the Decatur Police Department, who discussed "Truck Regulations in Cities", and Dr. Daniel R. Lang, Director of the Evening Division of Northwestern University, who discussed "Selling Your Traffic Plan".

After a very pleasing cafeteria style luncheon was devoured by everyone in a private dining room of the Union Building, the Friday Afternoon session was opened by Mr. Verle C. Crawley, District Engineer of Traffic for the Illinois Division of Highways in East St. Louis, Illinois, who discussed "Maintenance of Traffic Control Devices". The last speaker on the program was Paul W. Rice, Traffic Engineer, Evansville, Indiana, who talked on "New Developments in Traffic Engineering", such as the recently created yield sign.

The conference came to a close with Mr. R. A. Newton, Supervisor of the Engineering Extension of the University presenting attendance certificate awards to the 90 odd individuals registered at the conference. All in all it was very encouraging to find such a large attendance at this State-wide conference, particularly encouraging was the attendance of police officers who are in charge of traffic operations in the smaller communities throughout the state.

In compiling the total attendance figure of over 90, 28 different municipalities were represented as well as a total of over 40 separate organizations.

The following served as chairmen of various sessions of the conference:

Myron K. Lingle, Assistant Engineer of Traffic, Illinois Division of Highways, Springfield, Illinois; David J. Johnston, City Engineer, East St. Louis, Illinois; William F. Pollard, Assistant Program Coordinator, Assistant Professor of Civil Engineering at the University of Illinois, and Matthew C. Sielski, Director of the

Safety and Traffic Engineering Department of the Chicago Motor Club.

The following served as secretaries of the various sessions:

George F. Hagenauer, Jr., Traffic Engineer of the Cook County Highway Department in Chicago; Fred C. Mason, District Engineer of Traffic, Illinois Division of Highways in Elgin; Daniel J. Hanson, Traffic Engineer, Chicago Motor Club, and James F. Kaar, President of the Student Chapter of ITE at the University of Illinois.

The conference program chairman, Mr. John R. Leek, Instructor of Civil Engineering at the University of Illinois was unable to be present due to a personal injury, however, Professor of Highway Engineering, Ellis Danner, and William F. Pollard, Assistant Professor of Civil Engineering, did an outstanding job in running the program smoothly.

Many favorable and praising remarks were made about the Fifth Annual Illinois Traffic Engineering Conference, and it is hoped that the 1953 meeting will be even bigger and better.

Reported by D. J. Hanson
Member Publication Committee
Midwest Section—ITE

Michigan Traffic Signal Seminar Held

The second Traffic Signal Seminar, sponsored by Eagle Signal Corp. and Carrier & Gable, Inc., was held at Hotel Olds, Lansing, Michigan, on Wednesday, December 3rd, and Thursday, December 4th, and was well attended by State and City Officials from all over the State of Michigan. The sessions were purely of an engineering character. The average attendance at these sessions was 70. Lively and prolonged discussions followed the presentation of most of the papers. New equipment which broadens the effectiveness of traffic signal control was demonstrated and explained at length.

The guest speakers were Karl A. Bevins, Traffic Engineer of the City of Atlanta, Georgia, and Fred J. Meno II, Senior Associate Electrical Engineer of the Detroit Public Lighting Commission. (Mr. Meno's paper is carried in this issue.)

The Seminar was held at the request of many who had seen or heard of the original Traffic Signal Seminar held about a year ago at the Massachusetts Insitute of Technology under the auspices of the Massachusetts Department of Public Works and Eagle Signal Corporation.

These Seminars not only included the technical aspects of traffic signal and control equipment, but also many maintenance and installation problems. Judging from the comments received from those who attended, and requests from other parts of the country for similar seminars, it would seem that these seminars fill a long-felt and urgent need.

Position Available

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Graduate engineer with proven experience in traffic engineering required, preferably 30 to 40 years of age.

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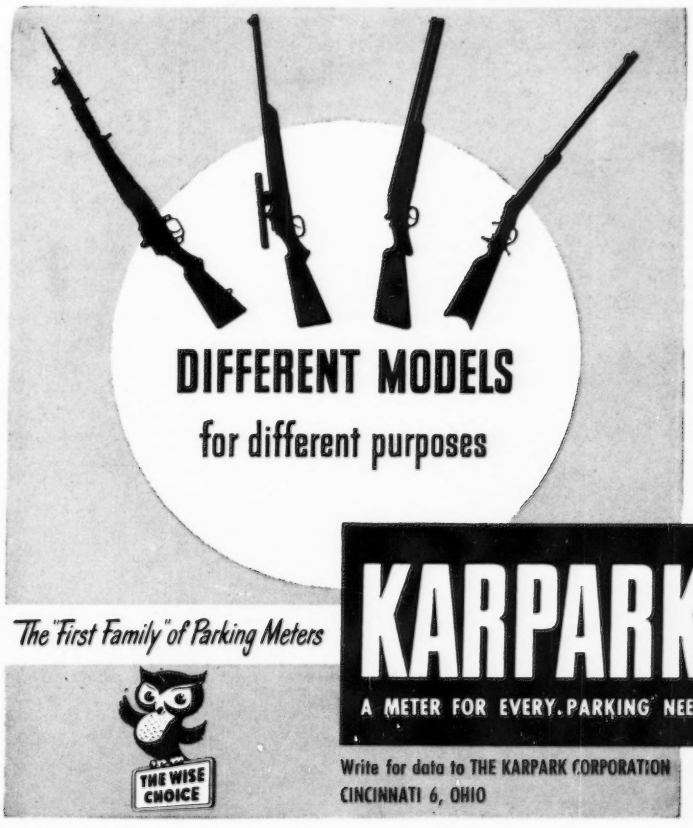

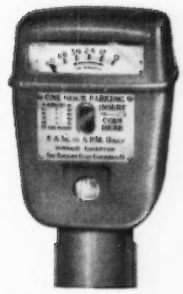

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New Appointments . . .

Siegel Joins National Safety Council Staff

On December 1, 1952, Stanley T. Siegel, or "Ted" as he prefers to be known, was employed by the National Safety Council as Traffic Engineer in the Traffic Division. Ted will take over the duties formerly performed by Ross

Stanley T. Siegel

Wilcox, who recently left the Council to join the Portland Cement Association.

Ted's primary duties with the Council will be as Secretary to the Committee on Winter Driving Hazards, which annually conducts a series of winter driving test projects on snow and ice covered roads and frozen lakes. These projects include the determination of braking and skidding characteristics of passenger cars and trucks, winter driving techniques, and the testing of various winter driving aids, such as snow tires, chains, sanders, anti-jackknife devices, and other commercially available products. Ted will also perform other traffic engineering functions, as assistant to Dave Baldwin, Director of the Traffic Division of the Council.

Born in Washington, D. C., Ted has lived in about nine different cities in all parts of the United States and Alaska; he says home is where he hangs his hat. He was graduated from Tufts College in Medford, Massachusetts, in October, 1944, with a degree in Civil Engineering, and shortly thereafter, received a commission in the Civil Engineer Corps of the Navy. His first overseas assignment was as Construction Officer with the 91st Naval Construction Battallion, in charge of placing concrete floor slabs for buildings of a 5000-man ship repair base in the Philippines. Several months later, Ted was transferred to Guam, where he spent a short time as Construction Officer with the 133rd Sea Bees before being assigned to the 144th Sea Bees, A.B.C.D. (Advanced Base Construction Depot) as Receiving Officer, in charge of receiving, routing and storing of all construction material and components arriving on the Island.

Upon returning to the States in April, 1946, and being separated from the Service a month later, Ted began looking for a job. He found, however, that due to material shortages and work cutbacks, there was nothing available for him. Then he remembered that while at Tufts, he had written a term paper entitled "The Parking Problem" and in his research for the paper had become acquainted with The Bureau of Highway Traffic at Yale University. A visit to New Haven resulted in his enrollment at the Bureau that September. Ted feels that this was one of the most important steps taken in his life; the training received at the Bureau has proven invaluable almost every day since completion of the course.

In July, 1947, Ted went to work for the New Jersey Motor Vehicle Department as an Associate Traffic Engineer. During the three years he was in New Jersey, he engaged in a great variety of traffic engineering activities, including consulting services for small municipalities as a representative of the State. It was while living in Trenton, New Jersey, that Ted met the girl who became his wife June 26, 1949.

Late in the summer of 1950, Ted moved to Chicago to accept a position as Traffic Engineer in the Bureau of Street Traffic, City of Chicago. Assigned to the Traffic Signal Section of the Bureau, Ted also worked on many temporary assignments with paint and sign crews in the field, as well as setting up detours and participating in parking meter construction.

Ted has always been active in ITE, on a national level, as well as in the New York Metropolitan Section, and the Midwest Section. He feels that the importance of the Institute cannot be over emphasized for the exchange of ideas and techniques and the overall elevation of the status of the profession of Traffic Engineering, to its proper position of major importance in the economic and social life of our cities, states, and nation. Since he believes that an organization's accomplishments are a result of the total efforts of its individual members, and that an individual gets out of an organization only as much as he puts into it, Ted has participated in the ITE as much as possible.

He has served as an Associate Editor of TRAFFIC ENGINEERING magazine for several years. He has been on the Local Arrangements Committee for two Annual Meetings, he was assistant

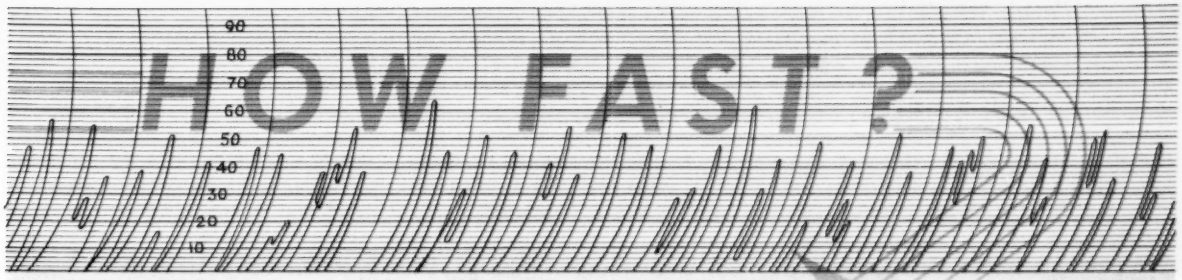
Mogren Appointed By Automatic Signal

Appointment of Edward G. Mogren to the sales staff of Automatic Signal Division, Eastern Industries, Inc., at Norwalk, Connecticut, was announced recently by Paul L. Green, Automatic Signal Division Sales Manager.

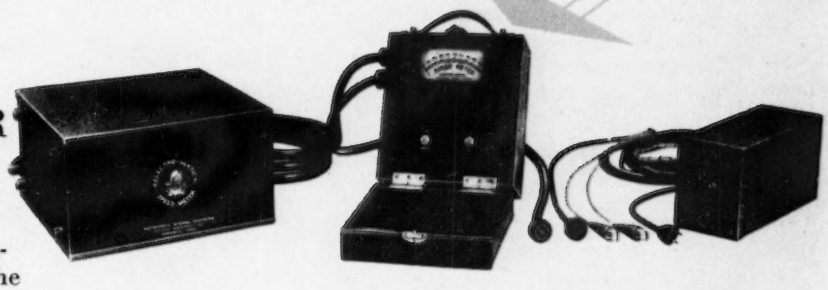
Edward G. Mogren

Before joining Automatic Signal Division, Mr. Mogren was Resident Traffic Engineer with the Eno Foundation for Highway Traffic Control, Inc., Saugatuck, Connecticut. He was also an Associate Editor of the Eno Foundation TRAFFIC QUARTERLY. Previously Mr. Mogren had service with the Michigan State Highway Department.

A graduate of Michigan State College and the Bureau of Highway Traffic at Yale University, Mr. Mogren's Institute activities include membership on the Parking Sub-committee on Financing Parking Facilities and his recent appointment as an Associate Editor of the Traffic Engineer's Technical Notebook.



Electro-Matic® Model S-1 SPEED METER



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Model S-1 SPEED METER measures accurately within 2 m.p.h. the speed of all vehicles approaching or receding in its path of microwaves. Its range is 0 to 100 m.p.h., read directly from the meter scale or permanently recorded tape by a Graphic Recorder.

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editor of PROCEEDINGS for two years, and was recently appointed Editor of the Traffic Engineers' Technical Notebook.

He is also a member of the American Society of Civil Engineers, Highway Research Board, and the Western Society of Engineers. He is a Registered Professional Engineer in the State of Illinois.

Ted has also been active in activities outside of his profession. He holds the post of Assistant District Commissioner in the Boy Scouts, he is advisor to the teen age group in his church, and is on the Board of Directors of the Cal-Jef Youth Center. He is also a member of True Craftsmen Lodge No. 202, A.F.&A.M.

14th Annual Southern Safety Conference and Exposition

March 1, 2, 3, 1953

Biltmore Hotel Atlanta, Georgia

will include Traffic Engineering Section Program

Address:
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P. O. Box 8927
Richmond 25, Virginia

SECTION NEWS

Washington, D. C., Section

The January 14 meeting of the Washington Section, Institute of Traffic Engineers, was attended by 29 section members and 86 guests who heard a very informative discussion of the New Jersey Turnpike by E. R. Ricker (Mem. ITE), traffic engineer of the turnpike authority. Aside from the constant problem of taking care of the unusually high traffic volumes, which are now running at the level originally predicted for 1968, a great part of the Authority's work is involved in planning extensions to and widening the turnpike.

Many of the ITE's national officers, in Washington attending the annual meeting of the Highway Research Board, were present at this meeting. These included F. B. Crandall, President; D. M. McNeil, Vice-President; and the following directors: Nat Cherniack, J. B. Ecker, J. E. Johnston, T. M. Matson, Carl McMonagle, and Paul Ristroph.

Henry Osborne, City Traffic Engineer of Buffalo, reported on plans for the national meeting scheduled for Buffalo later this year. One feature now being considered would provide care for annual meeting registrants' children, enabling out-of-towners to bring their offspring to the meeting.

The next meeting of the Washington Section is scheduled for February 25 at the Army and Navy Club. A cordial invitation is extended to all out-of-town ITE members who are requested to notify the secretary if planning to attend.

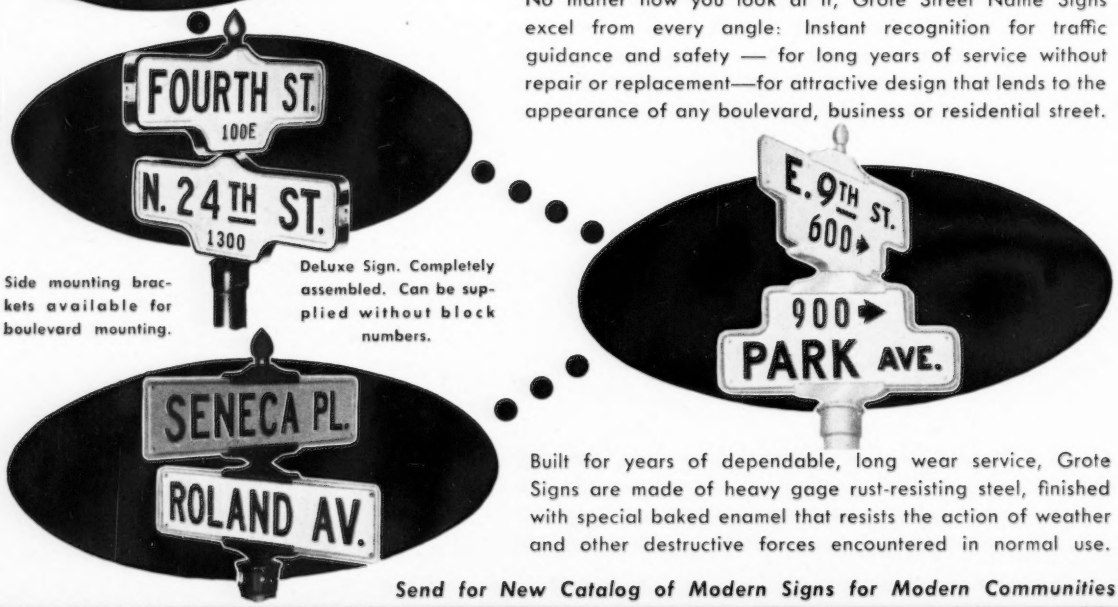
Reported by Henry K. Evans
Secretary-Treasurer

New York Metropolitan Section

The second meeting of the 1952-53 fiscal year of the New York Section of the Institute of Traffic Engineers was held on January 21, 1953, at the President Tavern, New York City. The meeting was called to order at 7:00 P.M., and 27 members and guests were present.

The speaker of the evening was Mr. Harold Hallock, of the Duffy Construction Co., and the subject of the discussion was—"What's New in Parking Devices". At the beginning of the talk a short film was shown on the method of installing "Permaline", a thermoplastic line marking, in the pavements. The film showed the equipment and the method used for such installation.

Grote STREET NAME SIGNS



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After the showing of the film, Mr. Hallock gave a very interesting and informative talk on the latest types of automatic garages and an automatic toll gate, or toll collecting device for unattended parking lots. Mr. Hallock offered some comparable cost figures on the price per stall for different types of garages.

Future meetings and speakers were announced as follows:

February — "New York Thruway" — Mr. Arnold Fisch

March — "Garden State Parkway" — Col. Braybrooke

April — "Adequacy of Sign Standards" — Mr. Jack Rhoades.

The meeting was adjourned at 10:00 P.M.

Reported by Nathan Avins
Secretary-Treasurer

Western Section

The Western Section extends a hearty welcome to Mr. Jerry F. O'Shea who has joined the ranks as a full member. Jerry is known to many of the members in the Bay area and is a valuable addition to our organization.

Down South

Margaret Woolverton, Traffic Engineer with the Quinton Engineers Ltd., is back from Mexico after a one month's stay. She says that they are geting well started on the San Diego job and have almost finished their Speed and Delay Studies. They are using an Esterline-Angus recording speedometer coupled to a Esterline-Angus 20-line pen and are getting very detailed information. Margaret says she doesn't know when they are going to find time to analyze it all.

Harry Parker, Los Angeles area Chairman, called an area meeting for the 20th of January. Members gathered at the Old Dixie Restaurant and enjoyed a dinner preceded by cocktails. John Hall, Information Officer of the Pasadena Police Department, was the speaker of the evening. His subject was "Traffic Control in Pasadena on New Year's Day."

Chuck Haley with the Phoenix Traffic Engineering Department joined George Barton and Associates of Evanston, Illinois on February 1. Success to Chuck in his new position.

Jim Reading is a grandfather twice more removed. Both the new additions were born on December 13, one presented by his daughter, and one by his son.

San Diego's citizens and officials of state, city, and county have united to attempt to reduce the worst accident record in history. A traffic safety conference was held January 15 for the purpose of developing a program for 1953 to curb accidents. Several members of the ITE are on conference panels including Mel West, speaking for the Engineering Division; Jim Reading, Chairman of the Engineering Division; and Ed Hall, representing the Accident Records Division.

The new Sears Roebuck Store in San Diego presented a new traffic problem. Sears moved from downtown to a site near U. S. 80 providing 1000-car parking lot for customers. The increased traffic volumes necessitated some changes so a system of one-way streets were installed. Jack Henberger redesigned the parking lot to operate more efficiently and to conform with the one-way street operation. The two improvements relieved the congestion problem and increased the flow of traffic in the surrounding area.

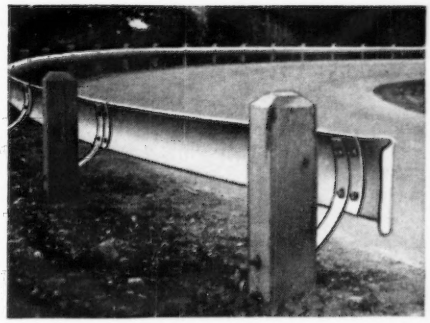
The San Diego County Traffic Committee has held its third meeting. This group consisted of Mel West, Ed Hall, George Parmalee, and representatives of the Highway Patrol, the County Road Department, and the Casualty Insurance Company, has done a fine job in improving rural traffic conditions. Joe Havenner, ex-prexy from the Automobile Club of Southern California sat in on this meeting replacing George Parmalee, who was out of town.

Up North

J. W. A. (Arch Bollong) claims the title of being the first traffic engineer to invade the ice-cap regions. Arch has been retained by the City of Anchorage, Alaska, for the purpose of making a quick but intensive survey of traffic conditions there. Accompanied by mucklucks, longies, and one Stratocruiser, Arch departed from the Seattle Air Terminal on January 10 for his northern jaunt.

Harry Aumack and Bill Stockdale, responsible for Spokane's traffic and planning, are finding little time on their hands these days. Such matters as everyday traffic problems, one-way streets, proposed new free-ways, and planning for toll bridge keeps them pretty well occupied.

E. E. Lewarch and staff from Seattle are trying to keep ahead of the traffic problem by some innovations in the field of traffic control in order to move traffic more expeditiously through the



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downtown area during the peak hour. The first step was to restrict parking during the peak hour rush. The second step was to prohibit left turns at the more busy intersections, and their last measure, one that they are trying out now, is the prohibition of right turns also. Lew says his staff is also working with the State Highway Department in the planning of a $200,000,000 freeway through Seattle.

Now that the legislature is in session, Herb Higgins, Secretary of the Highway Commission, is up to his ears in legislative matters affecting the state highway system.

Some of the Institute members around Olympia are growing webfeet in self-defense; likewise, traffic control has not been helped by the twelve inches of rain we have had in the past two weeks.

The ratio of persons to vehicles in the State of Washington is decreasing year by year. The ratio for the state as a whole is 2.3 persons per vehicle, while the ratio in some of our counties has dropped to 1.3 persons per vehicle. According to Washington's Planning Engineer, C. K. Glaze, if the past trend holds true, by the year, 2034, there will be more vehicles than persons. "This Business of Highways." Traffic Quarterly, January 1953.

Bob Schmidt, Tacoma's Traffic Engineer, says that life is a little easier living since he got himself an assistant. Yoshio Kosai, graduate of the '52 class at the Yale Bureau, who has been Bob's right hand man since last July, was formerly with the Washington Department of Highways.

Dave Morris has been named chairman of the nominating committee for the nomination of 1953-1954 officers for W.I.T.E.

Rex Still, Washington's Traffic Engineer, recently received a 25-year meritious award from the American Association of State Highway officials. The award, made to persons outstanding in the field of highway engineering, was given at the annual conference in Kansas City, and was accepted by Highway Director Bill Bugge on behalf of Rex, who was unable to be present.

The Traffic Engineering Division will soon conduct a series of speed and placement studies to determine the proper design of truck lanes.

Oregon

Still no news from our Oregon correspondents, but through the grapevine we hear; that Bruce Crandall has just recently returned from Washington, D. C., where he had occasion to confer with the Washington officials of the United States Bureau of Public Roads.

Out Denver Way

Hank Barnes has just returned to Denver from New York, where he attended a meeting sponsored by "Life", "Time", and "Fortune" magazines on urban traffic and transportation problems. The round table discussions represented men from business, industry, city planning, traffic engineering, and mass transportation. Hank was off again early this month for a month's leave of absence, doing a consulting job for the city of Baltimore.

Al Pepper and his staff report that everything is going along as usual at their office, and that they wish to extend to everybody in the Western Section their very best for the coming year.

Reported by W. H. Carsten
Secretary-Treasurer

Midwest Section

The Second Annual Banquet and Ladies' Night of the Midwest Section was held on Friday, January 16, 1953. Almost 90 members, guests and their ladies gathered at the Chicago Engineers Club for a most successful and enthusiastically received event.

Les Sorenson, acting as toastmaster for the evening, presented a scroll to retiring President Bill Marston in recognition of his leadership and efforts in behalf of the Midwest Section during his term of office.

The new officers of the section: President Dick Fencl, Vice-President Ralph Gross, Secretary-Treasurer Evan Olmstead, Director Ralph Michel and Director George Hagenauer were introduced by Mr. Sorenson. Director Howard Ilgner was unable to be present at the meeting. After a short address from President Fencl, Les Sorenson introduced the speaker of the evening, Mr. R. C. (Burt) Salisbury, Director, Safety Division, Wisconsin Motor Vehicle Department. Burt Salisbury's stories, jokes and amazing facts of prestidigitation were highly entertaining and served as a fitting climax of the evening.

Special credit is given to Walter Jolesch and his committee for their arrangements and organization. It can be said that the success of the evening was due in a large part to their efforts.

Reported by Evan E. Olmstead
Secretary-Treasurer

LOOKING AHEAD

MARCH 1-3, 1953—ATLANTA, GEORGIA
Annual Meeting, Southern Safety Conference and Exposition, Hotel Atlanta Biltmore.

MARCH 30-31, 1953—BOSTON, MASS.
32nd Annual Massachusetts Safety Conference and Exposition, Hotel Statler.

JUNE 20-JULY 3, 1953—ATLANTIC CITY, N. J.
Summer General Meeting, American Institute of Electrical Engineers.

AUGUST 10-12, 1953—LOS ANGELES, CALIF.
Annual Meeting, American Transit Association, Hotel Biltmore.

SEPTEMBER 14-18, 1953—NEW YORK CITY
Annual Meeting, Illuminating Engineering Society, Hotel Commodore.

SEPTEMBER 28-OCTOBER 1, 1953 — BUFFALO, N. Y.
24th Annual Meeting, Institute of Traffic Engineers, Hotel Statler.

OCTOBER 5-8, 1953—COLUMBUS, OHIO
58th Annual Meeting, International Municipal Signal Association, The Neil House.

Hearst Publications Supporting Movement For Better Highways

A concerted drive to enlist public support for the nation-wide movement for better roads was launched recently by Hearst newspapers, magazines and radio stations. The campaign will use all the Hearst properties to acquaint the public with the problem of traffic congestion and what it means to everyone, and what can be done to get the nation out of the "traffic jam."

Plans for the campaign were announced at a meeting in Detroit of Hearst executives and automotive industry leaders, who were invited to aid in this new effort. Special articles, editorials, photos and charts will be used in publications to drive home the need for stepped-up highway improvement. Radio stations will carry similar messages.

The campaign will continue indefinitely, according to executives of the Hearst organization.

Secretary's Column

Last month the Board of Direction held its first meeting of 1953 in Washington, D.C., on January 12th, the day before the 33rd Annual Meeting of the Highway Research Board began. So many ITE members attend and participate in the Highway Research Board meetings that it has become an annual custom for the Institute's Board to schedule a meeting at the time of the HRB program.

Ten of the eleven Board members were present. Responsibilities concerning pending legislation under consideration by the California legislature caused a last minute cancellation of Director Joe Havenner's plans to attend.

A lengthy agenda kept the Board working eleven full hours. Some of the more important actions taken are outlined in the following paragraphs.

Approved the financial report for 1952 which for the first time since the Institute became self sustaining showed a sizable excess of revenue over expense —about 11%.

Approved a budget for 1953 of approximately 13% more revenue than 1952, expected to exceed by 5%, expenses budgeted at 25% more than '52. The major increase in expense would result from the employment of an additional man to help with the Magazine—a course that was approved by the September Board meeting.

A decision not to take any position relative to the *use* of portable traffic signals, because of a lack of factual data. Reiterated its position that all traffic signals — including portable — shall conform to standards of color arrangement, size of lens, flexibility of time splits, and height of mounting.

Confirmed the date and place for the 25th annual meeting: September 27-30, 1954, Muehlbach Hotel, Kansas City, Missouri.

Complied with the wishes of the Buffalo Local Arrangements Committee by approval of a plan of solicitation of voluntary convention fund contributions, with the rental of exhibit space for a commercial exposition being prohibited for 1953.

Agreed to the publication of a 1952 PROCEEDINGS, provided budgetary item for this purpose will not be exceeded.

Appointed a committee to consider a second printing of the Traffic Engineers Technical Notebook which has been completely sold out.

Approved a new sales promotion effort for the Handbook.

Approved the transfer of 5 Juniors to Associate membership and 5 Associates to Member.

Elected to new membership: 14 Juniors, 11 Associates and 5 Members. Extended invitation to 3 Affiliates and 3 Sustaining Organzations.

Scheduled next meeting for early June in Washington in conjunction with a meeting of the Joint Committee on Traffic Control Devices whose membership includes 3 members of the ITE Board of Direction.

* * *

Headquarters office lost its oldest—in point of service; not age—employee, January 31st, when Miss Bridget Pellegrino resigned to become the bride of Mr. Ralph Castellon on February 9th. Miss Pellegrino had served the Institute since January 1948 as principal Secretarial Assistant during which time her grand personality won her a host of friends throughout the Institute membership.

Miss Anne Leftwich becomes principal Assistant and Miss Marie Mazza is now finding herself at home as our newest and youngest employee.

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